

FIG. 1

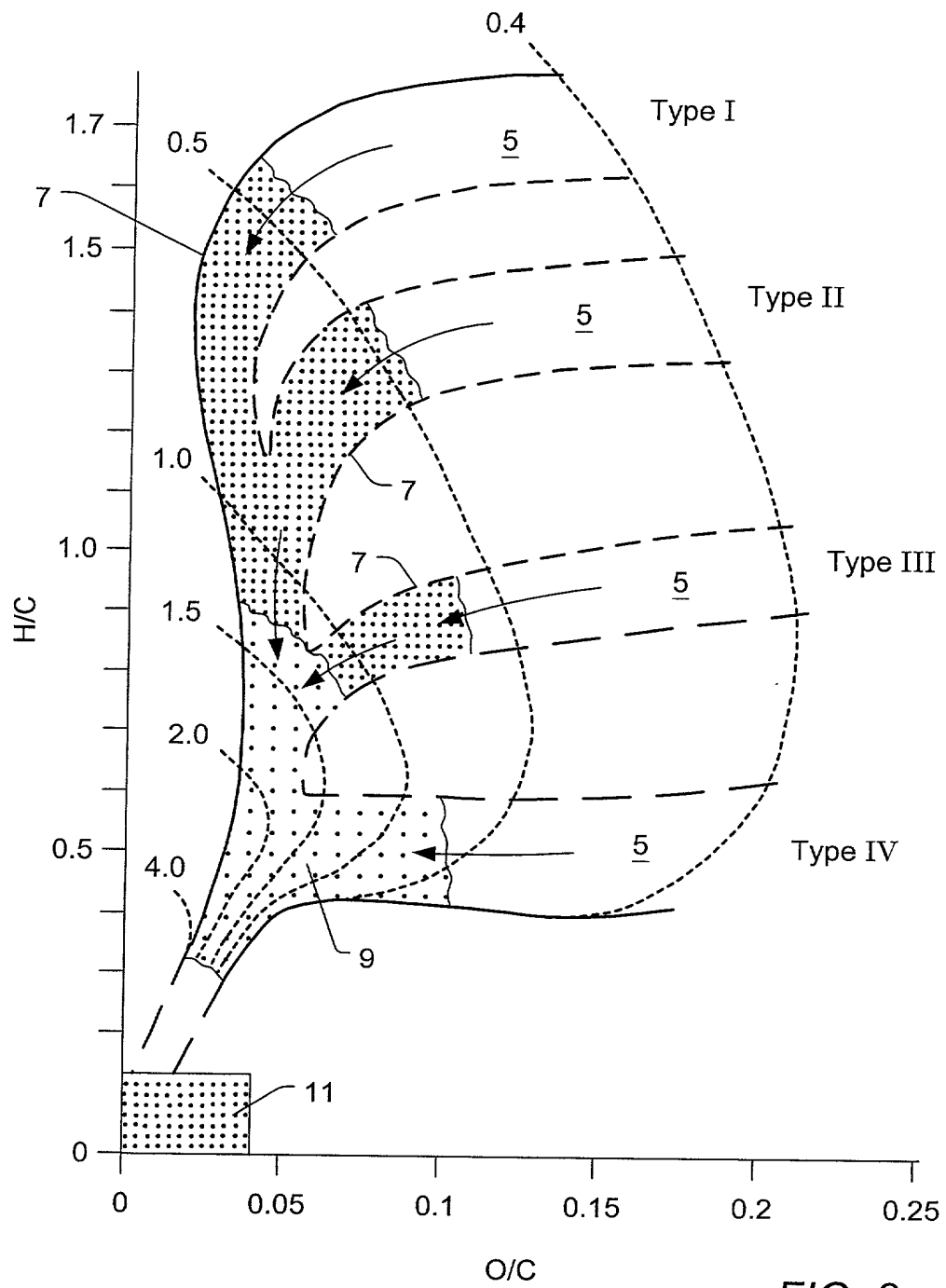


FIG. 2

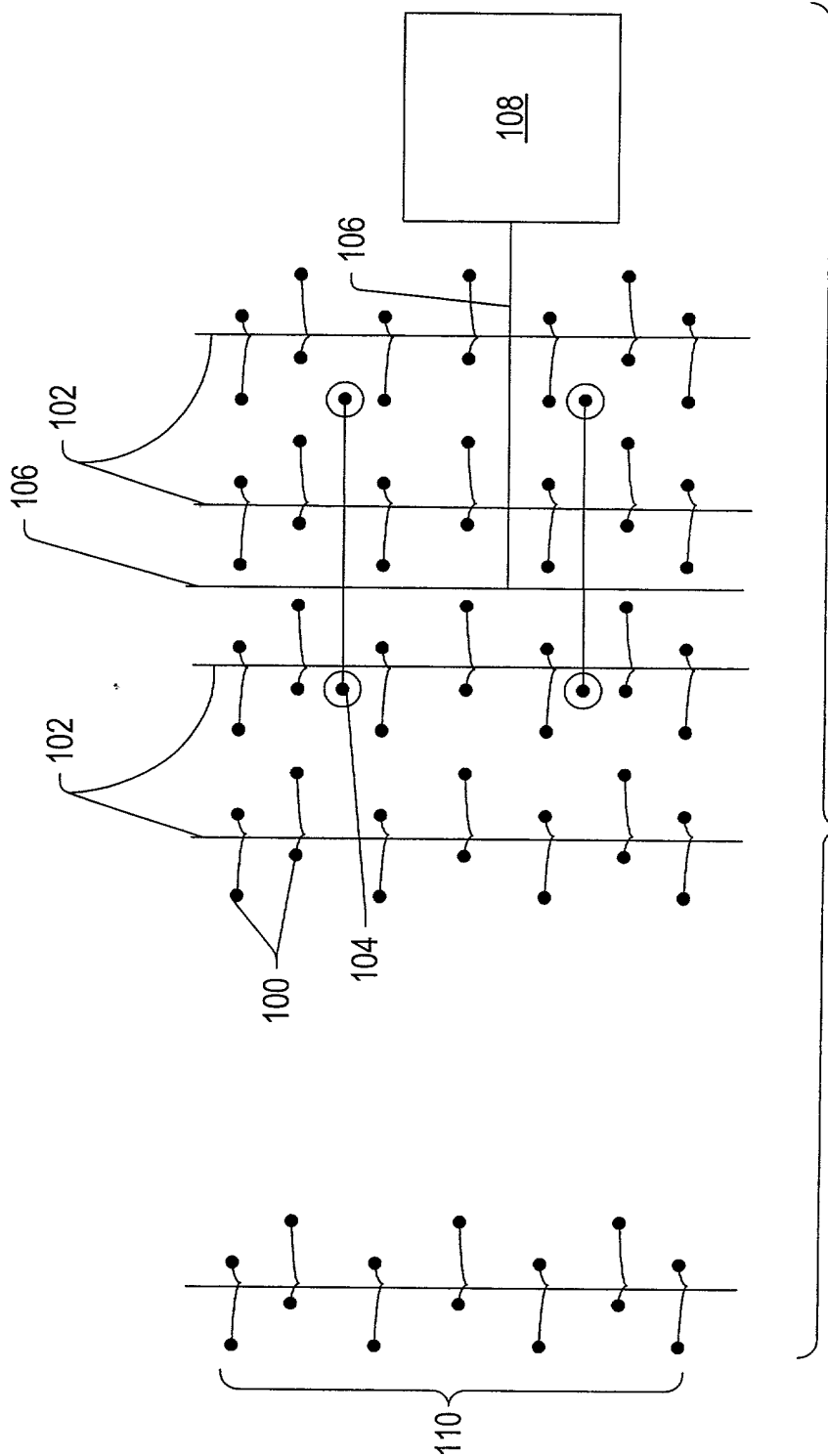


FIG. 3

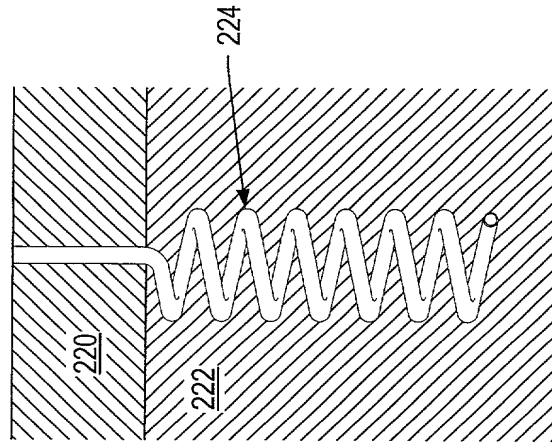


FIG. 3a

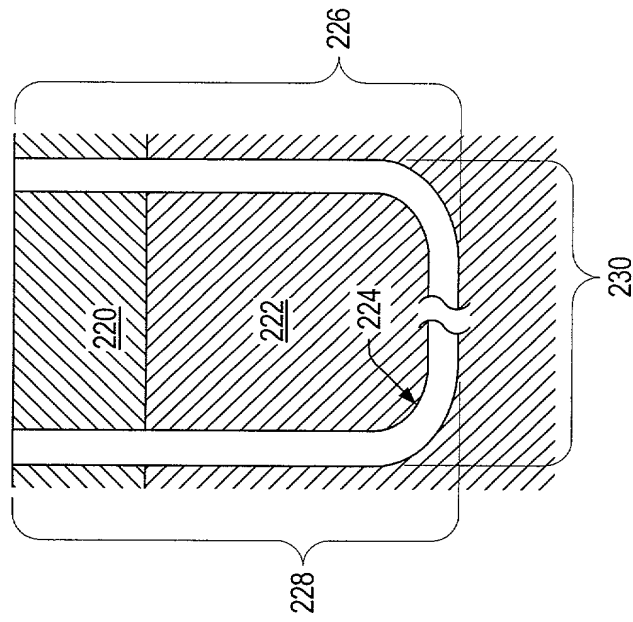


FIG. 3b

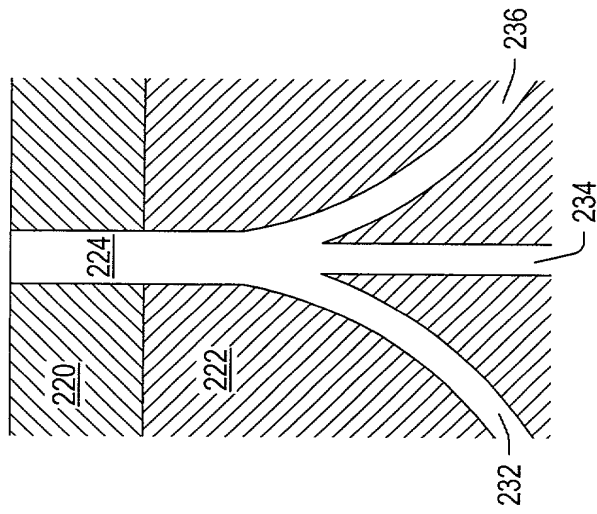


FIG. 3c

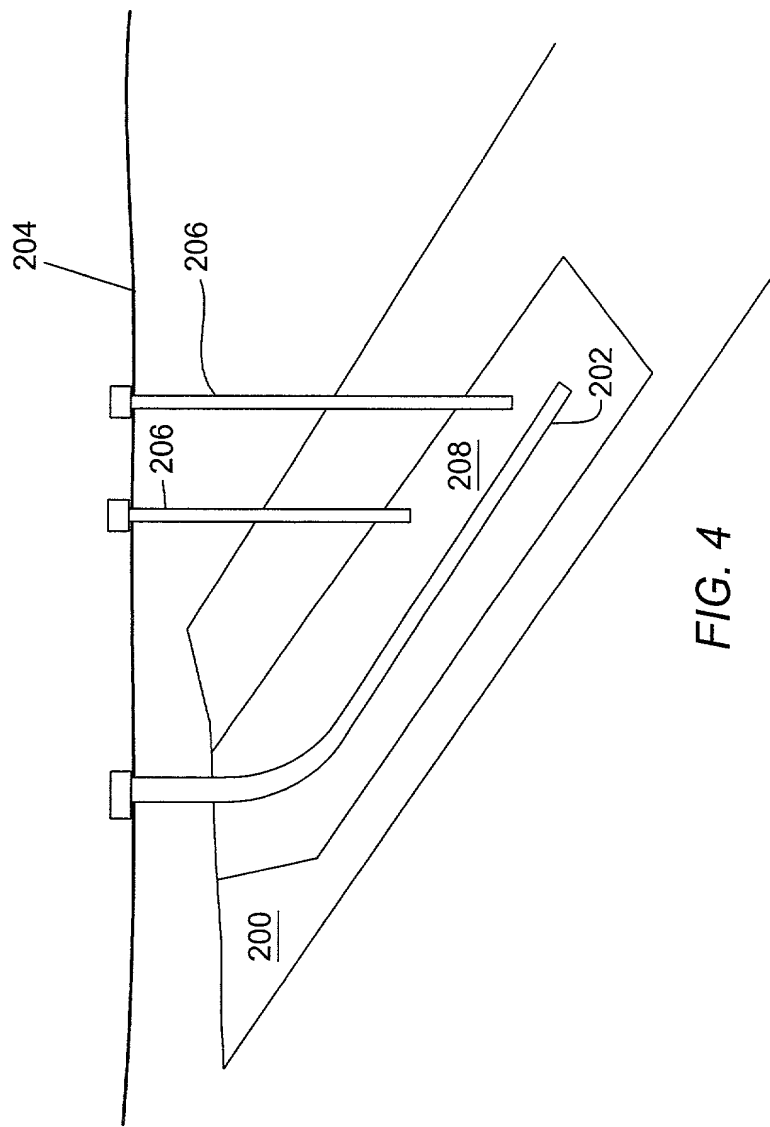


FIG. 4

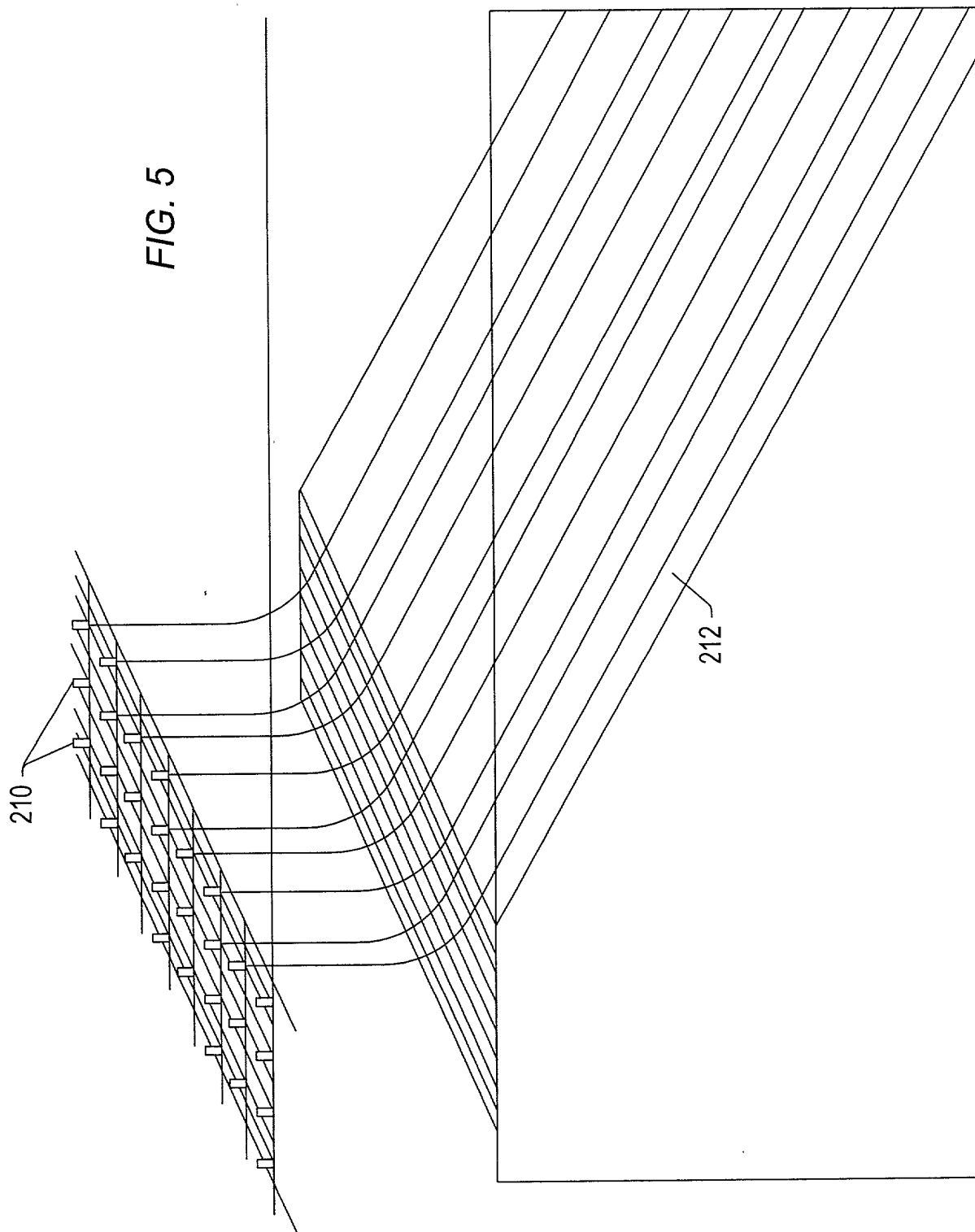


FIG. 5

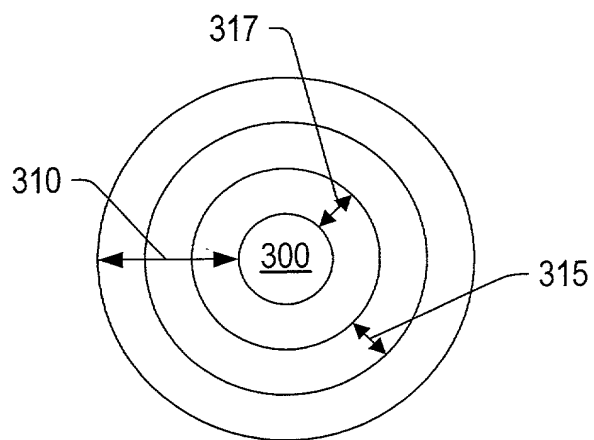


FIG. 6

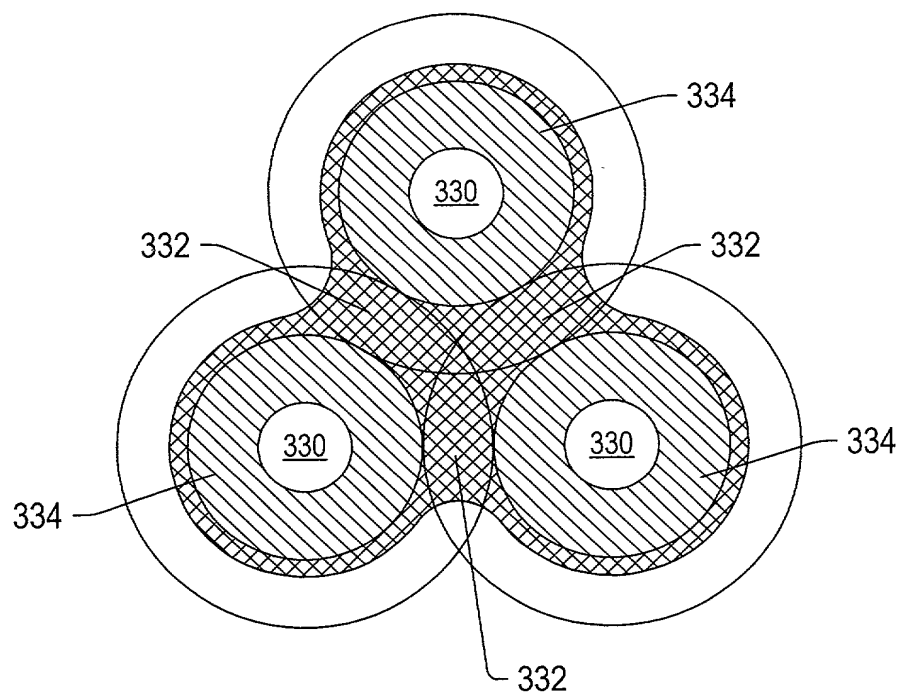


FIG. 7

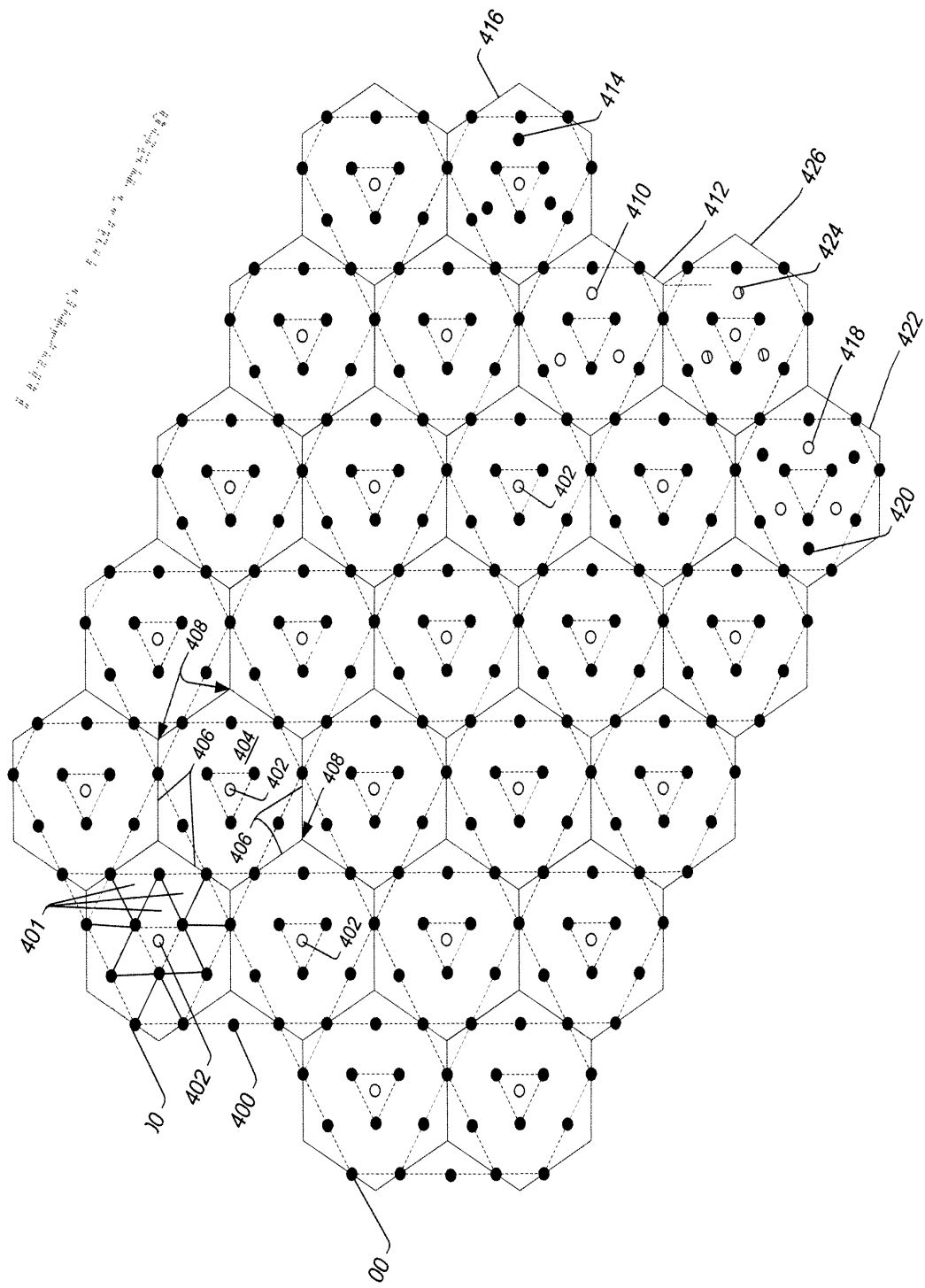


FIG. 8

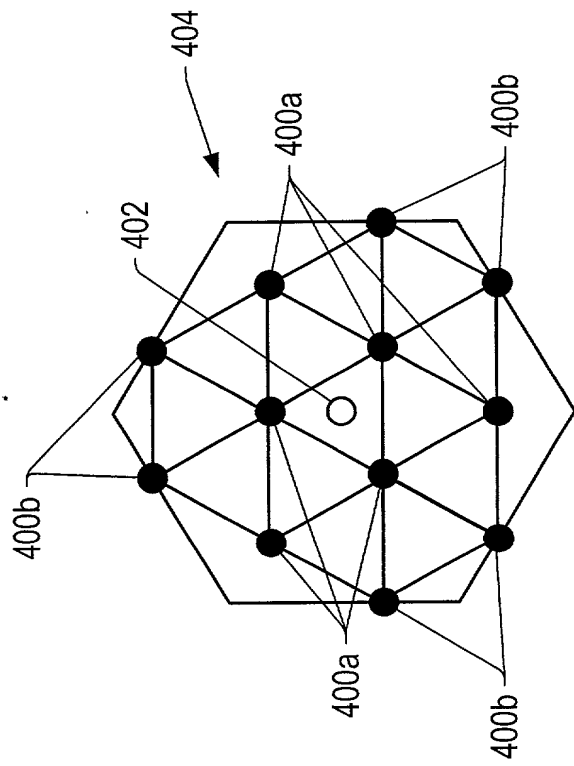


FIG. 9

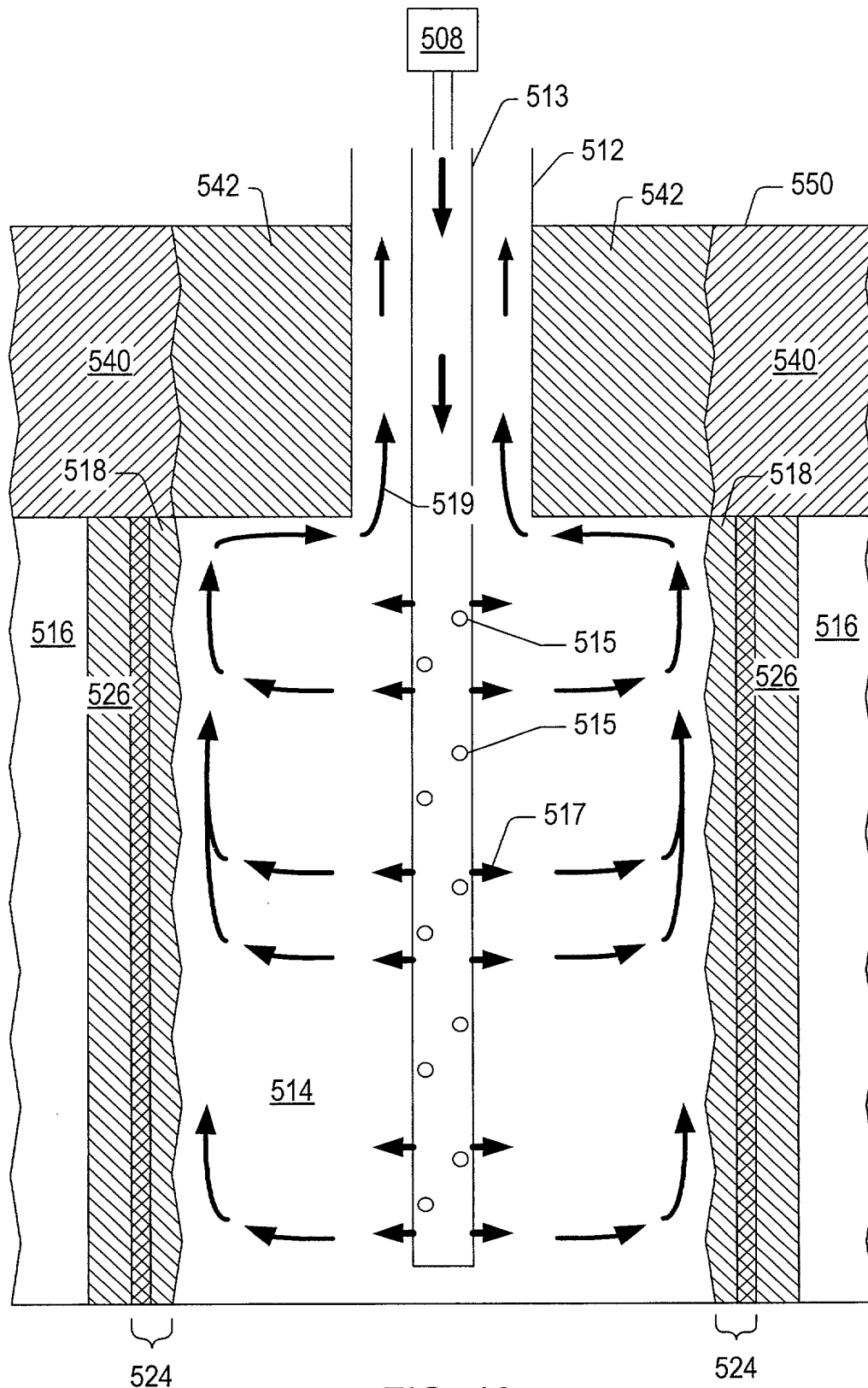


FIG. 10

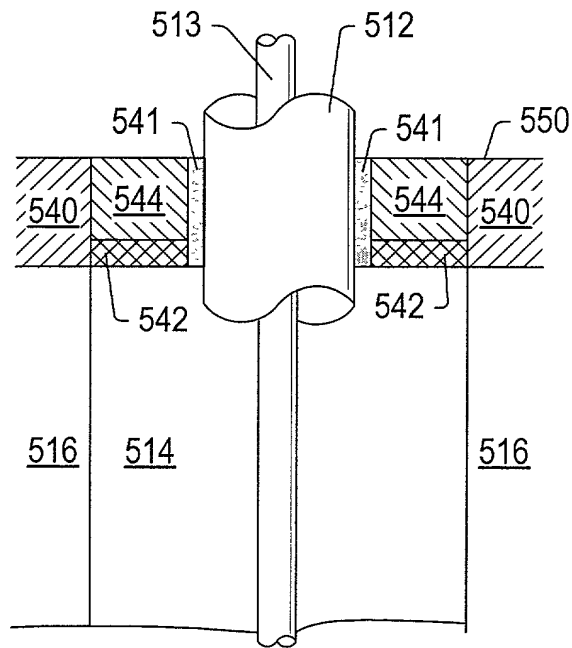


FIG. 11

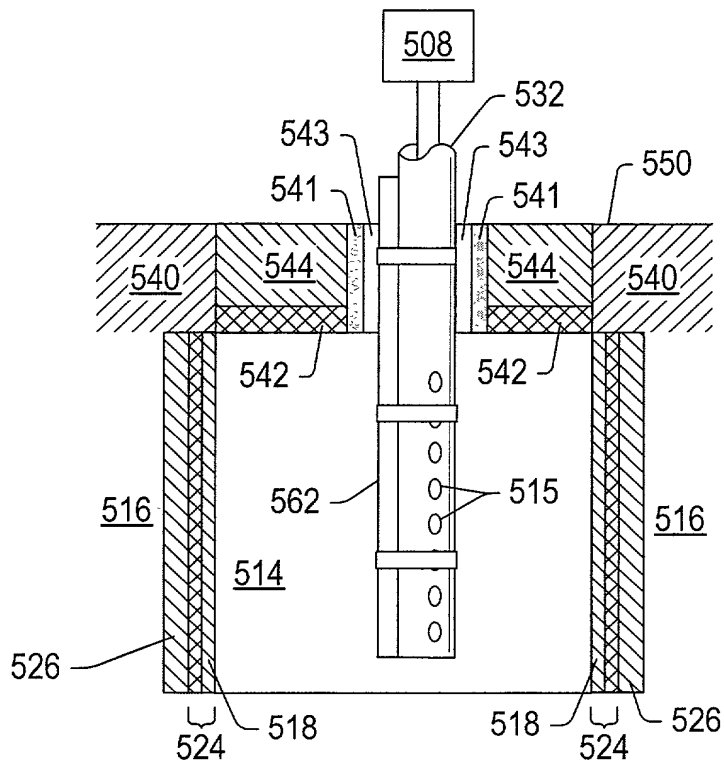


FIG. 12

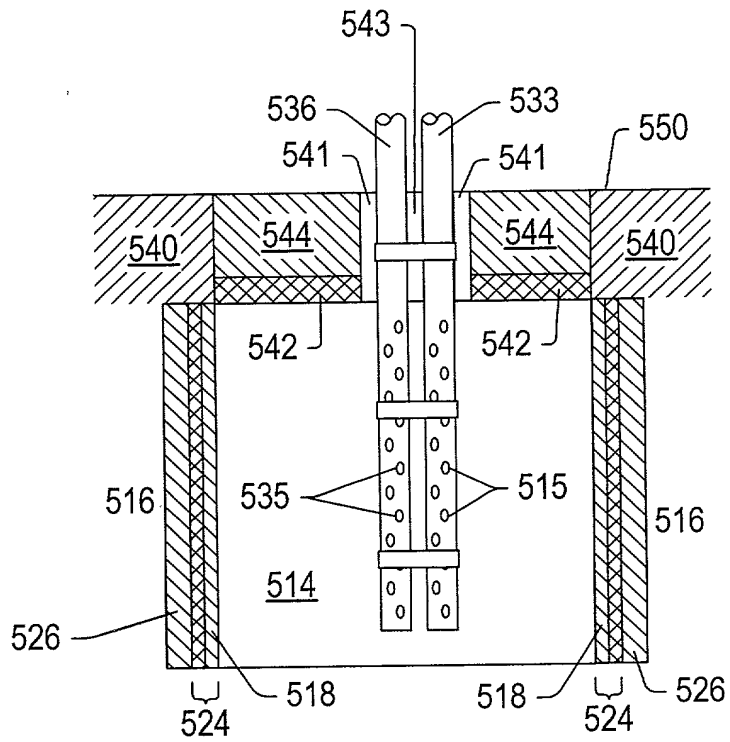


FIG. 13

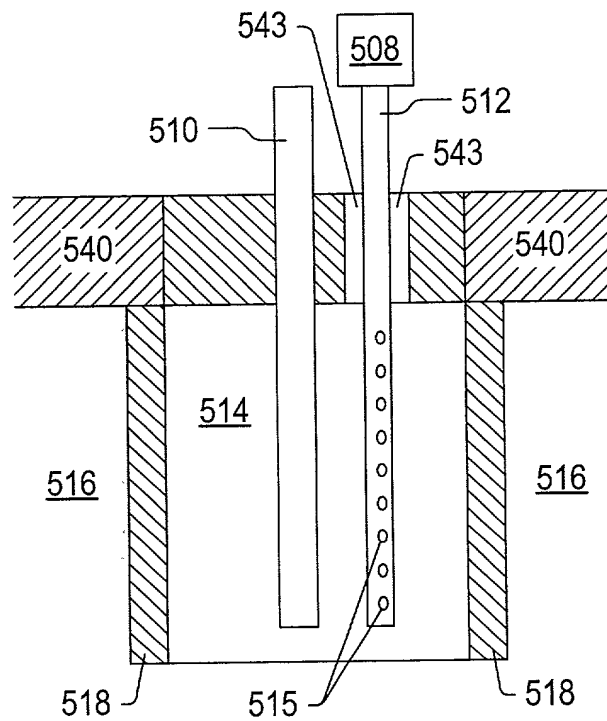


FIG. 14

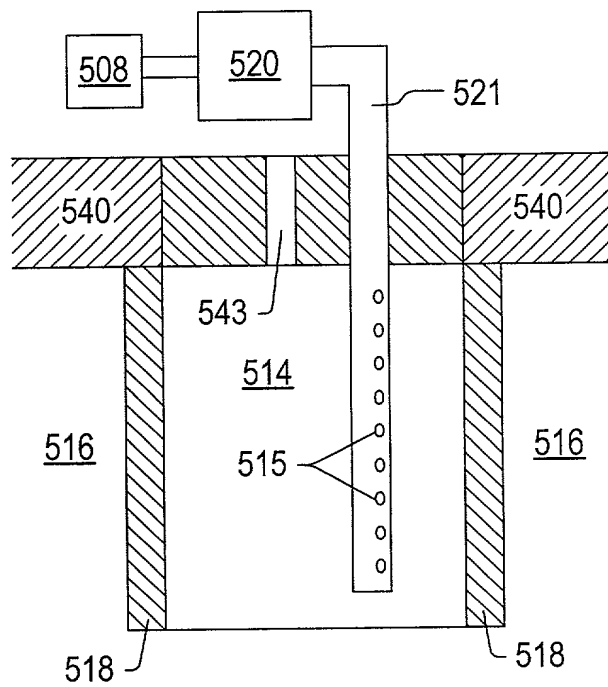


FIG. 15

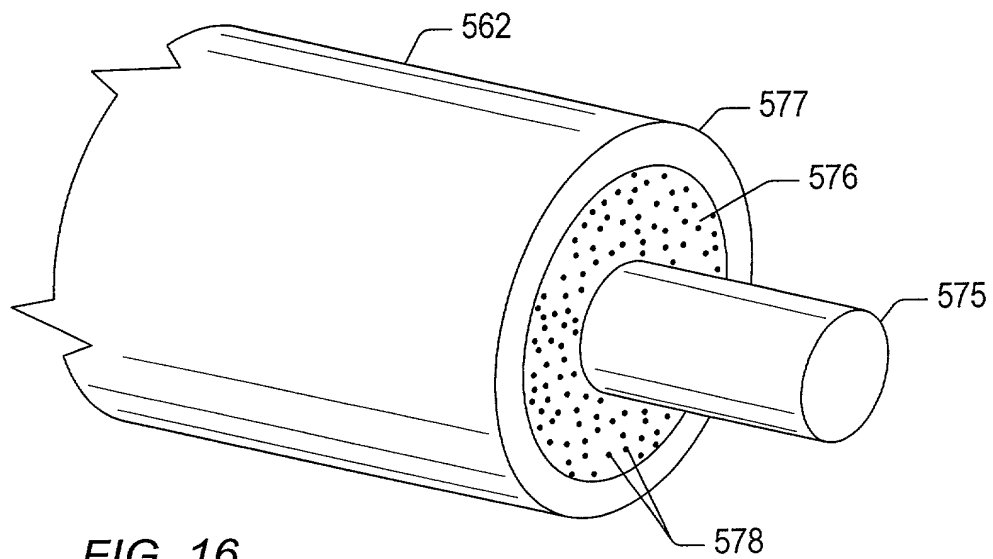


FIG. 16

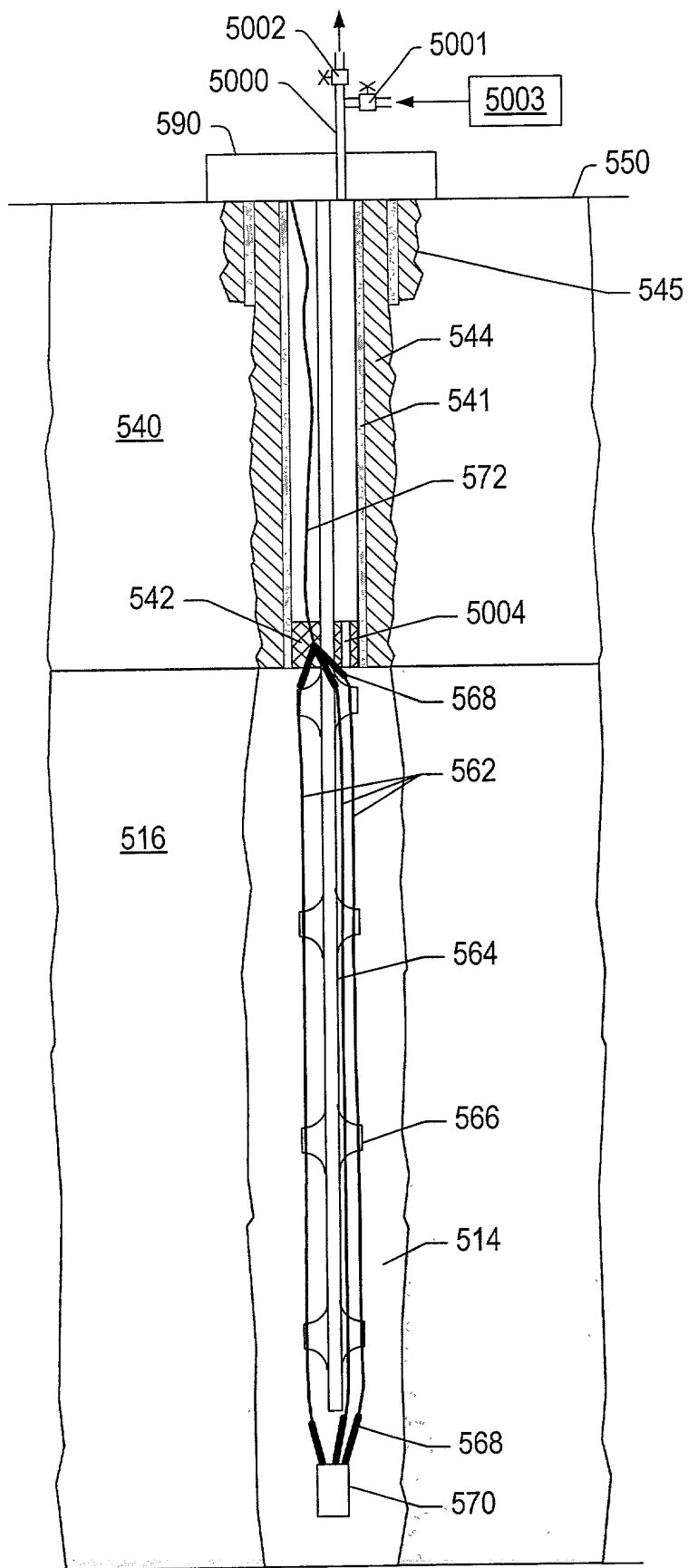


FIG. 17

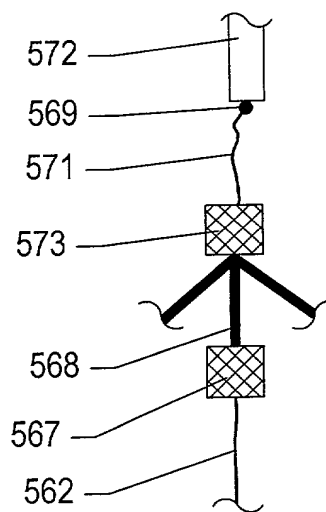


FIG. 17A

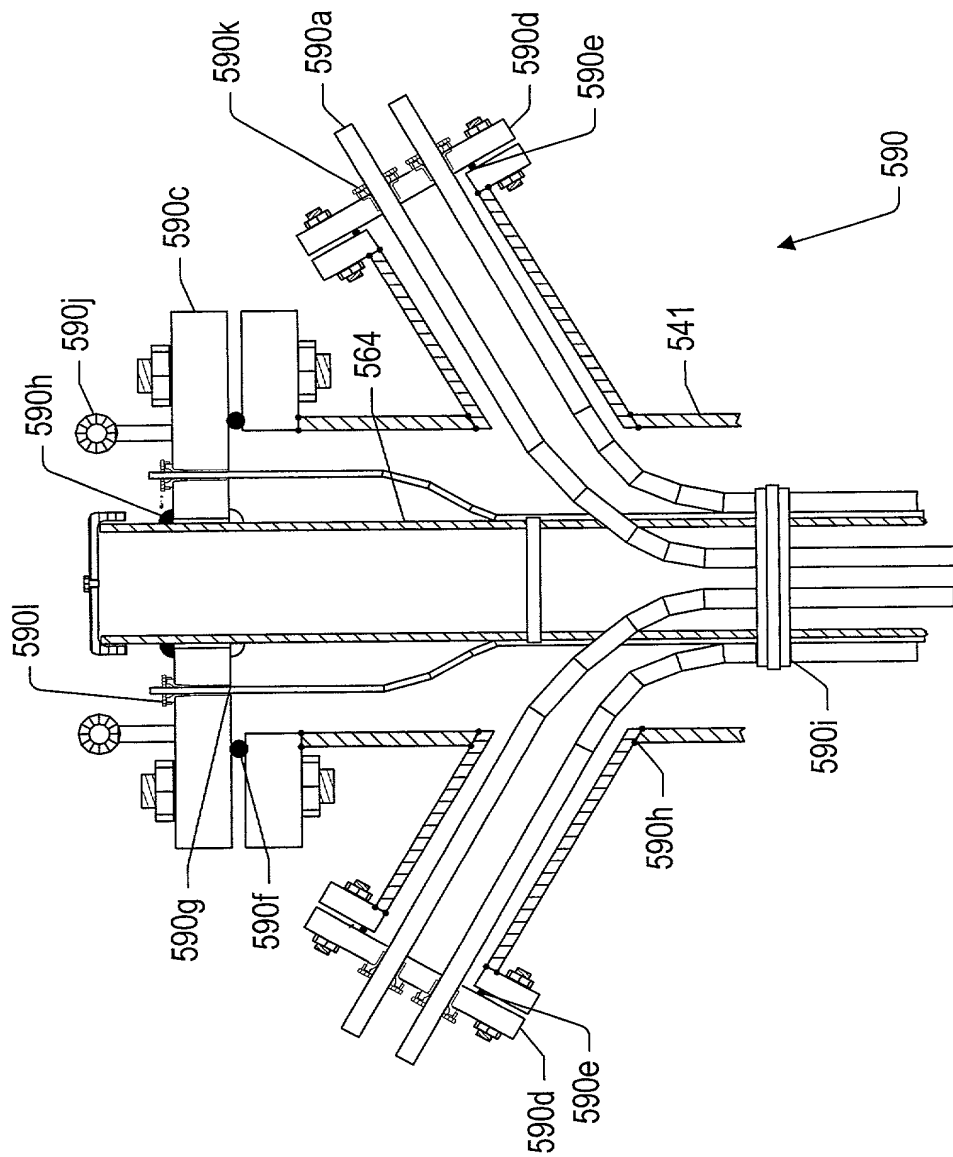


FIG. 18

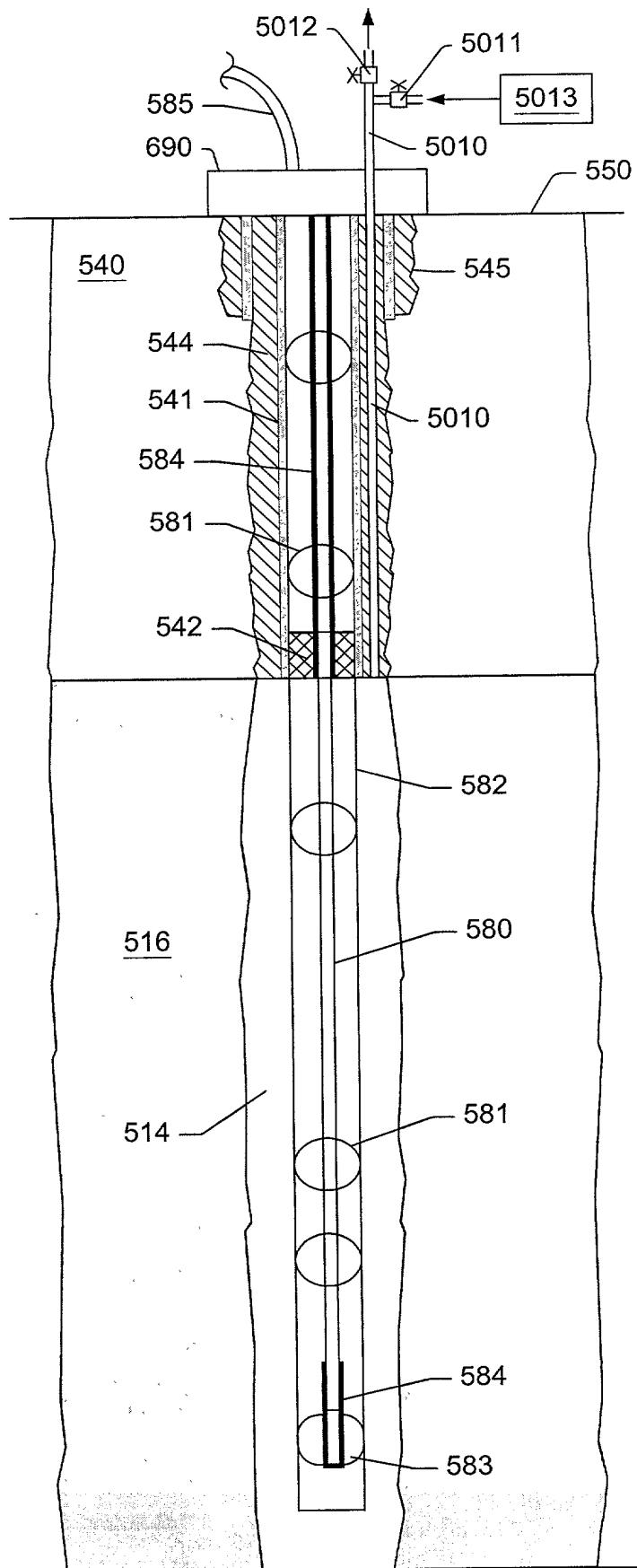


FIG. 19

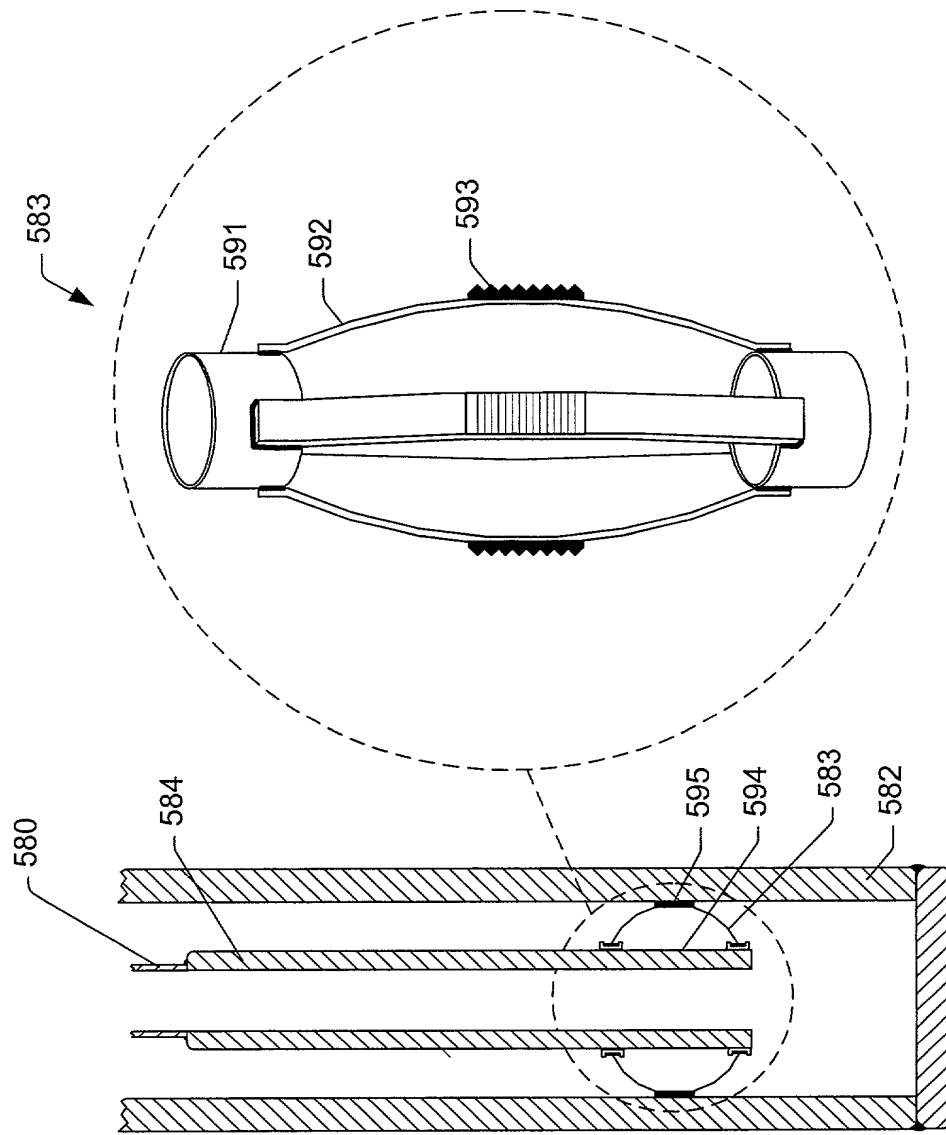


FIG. 20

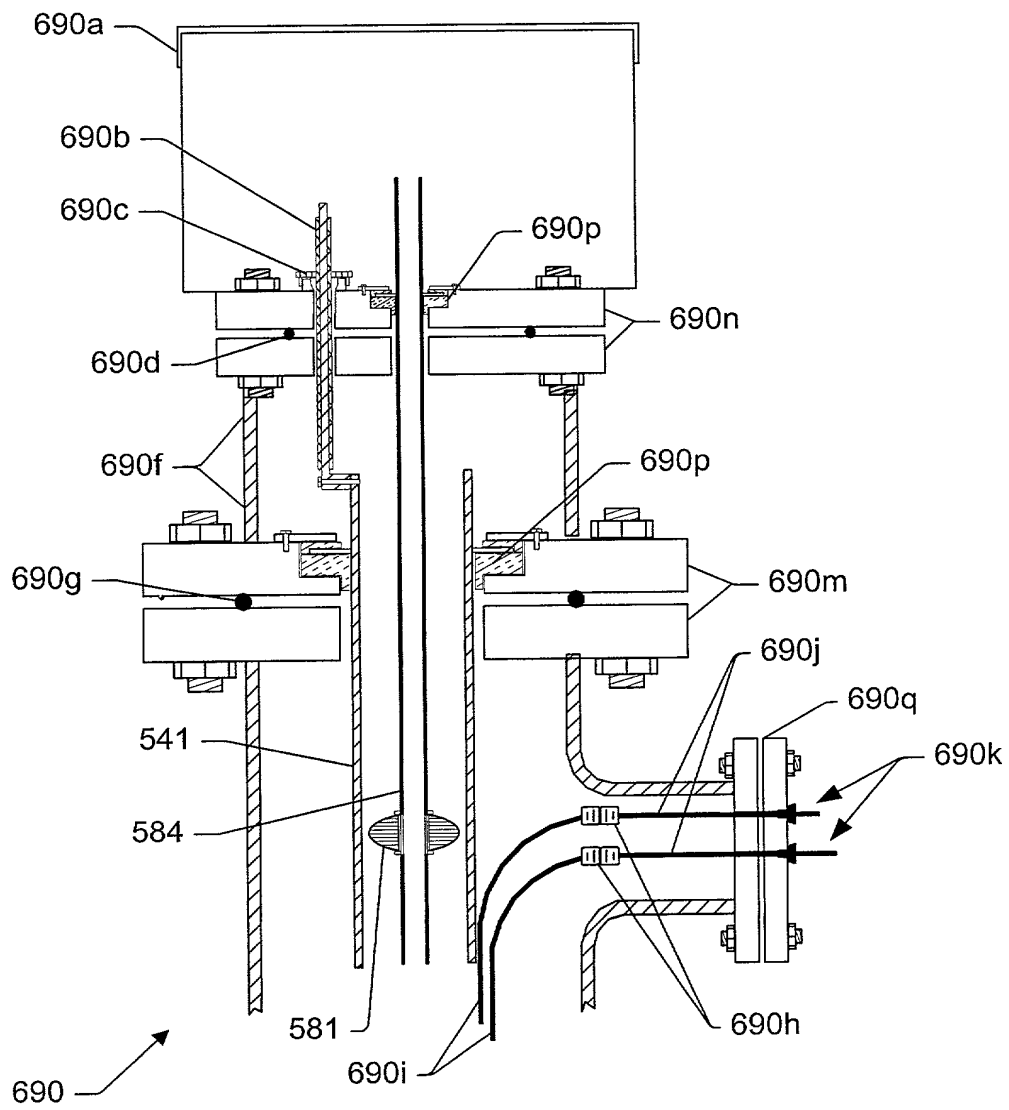


FIG. 21

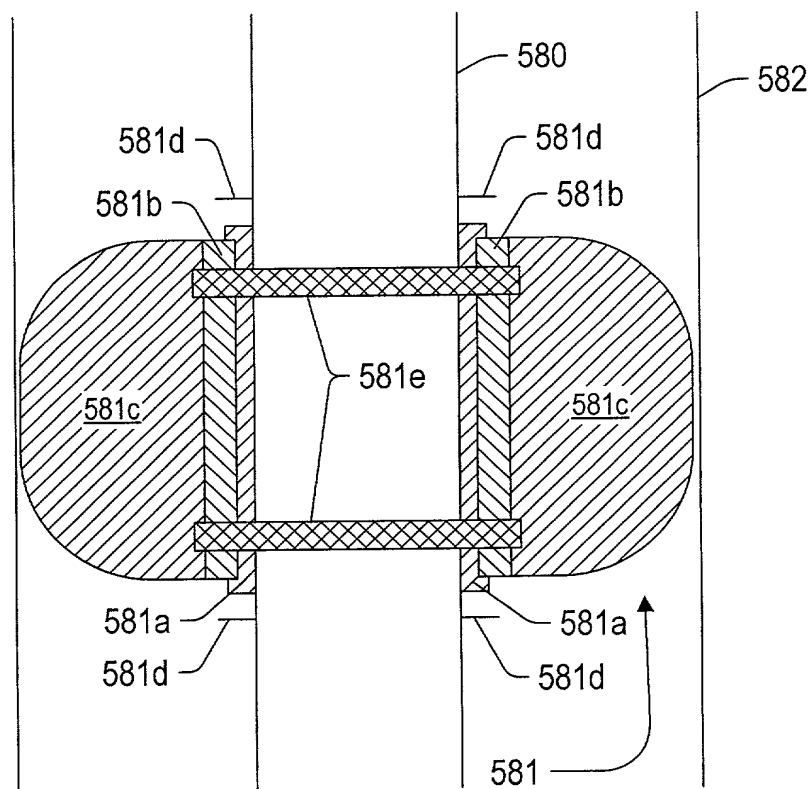


FIG. 22

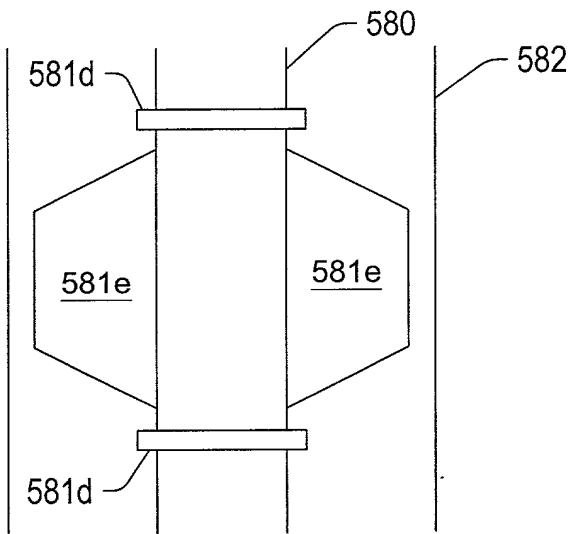


FIG. 23a

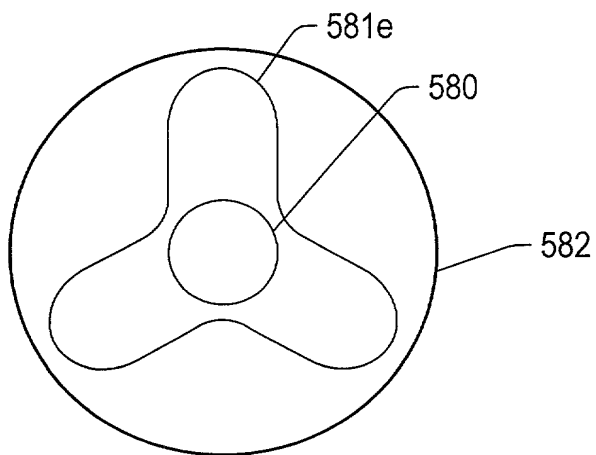


FIG. 23b

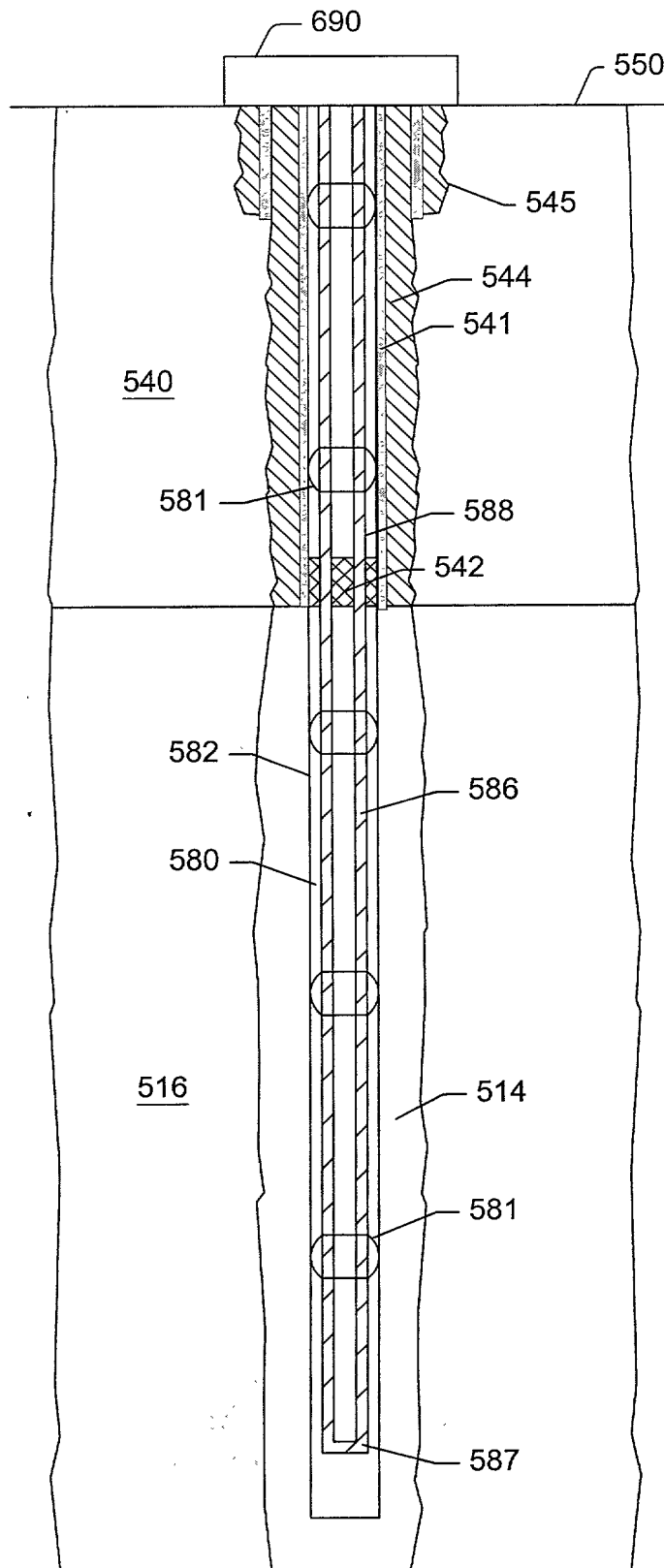


Fig. 24

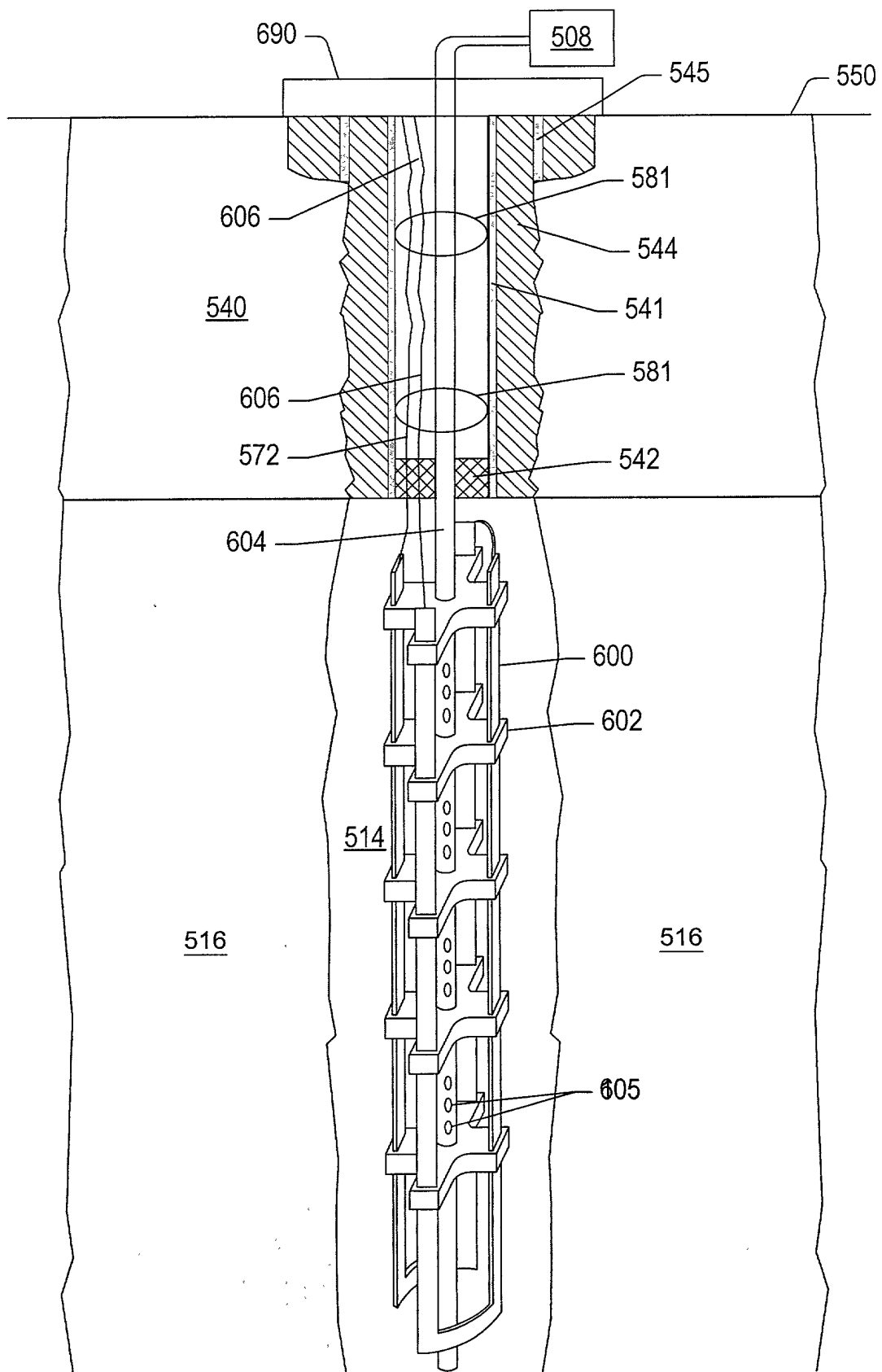


FIG. 25

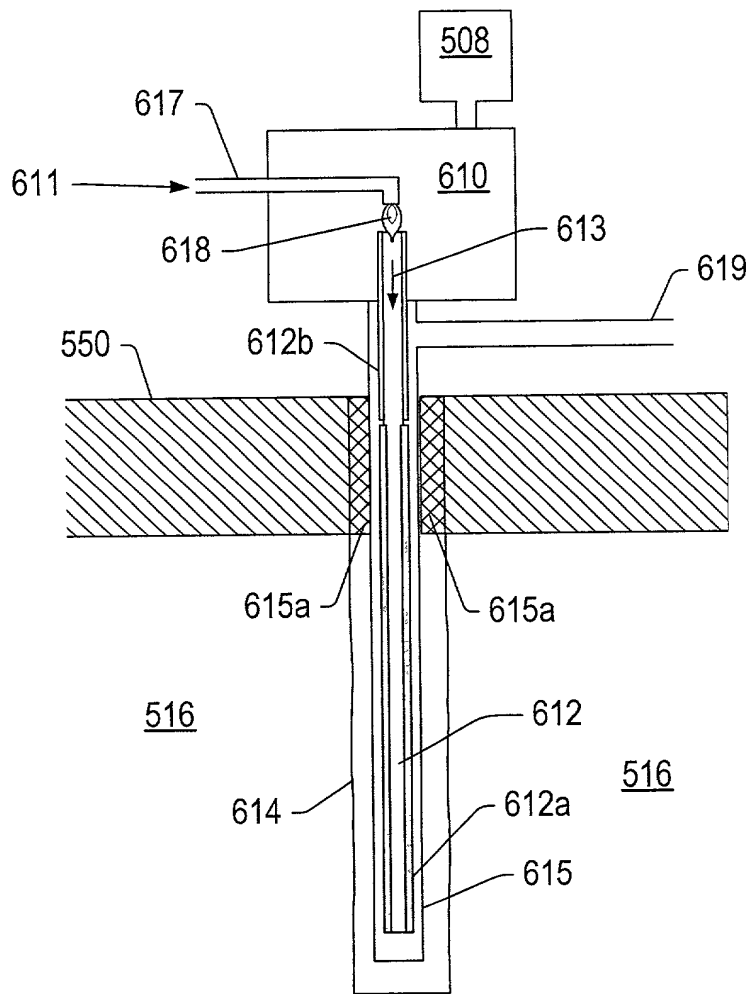


FIG. 26

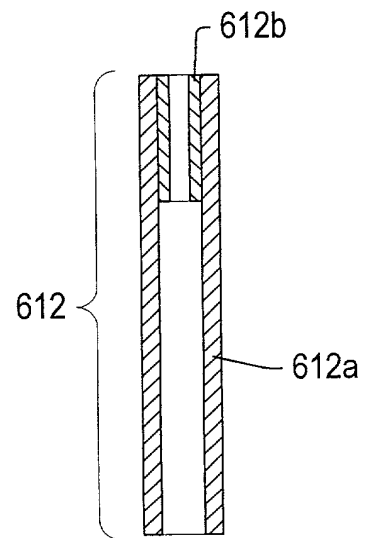


FIG. 27

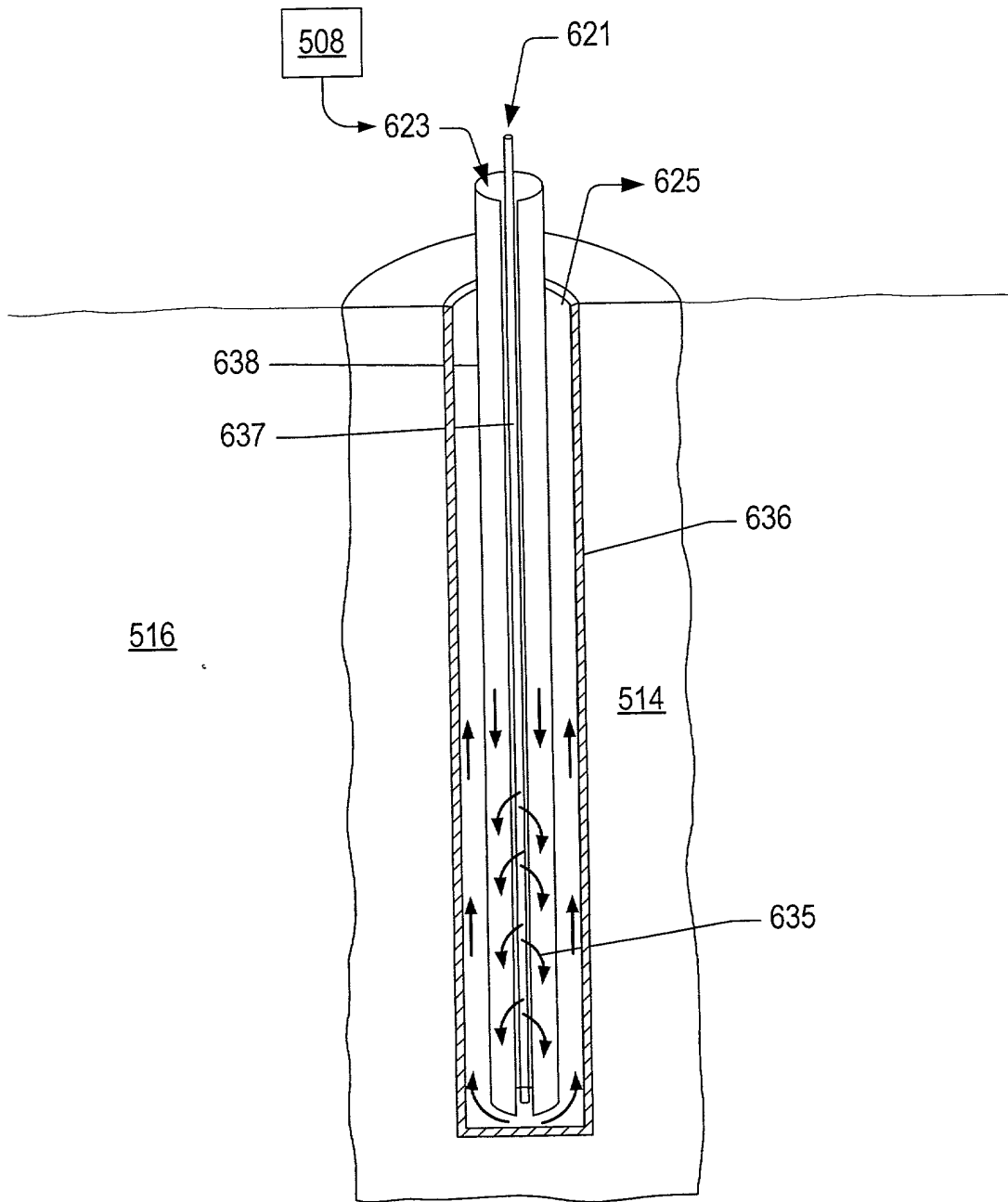


FIG. 28

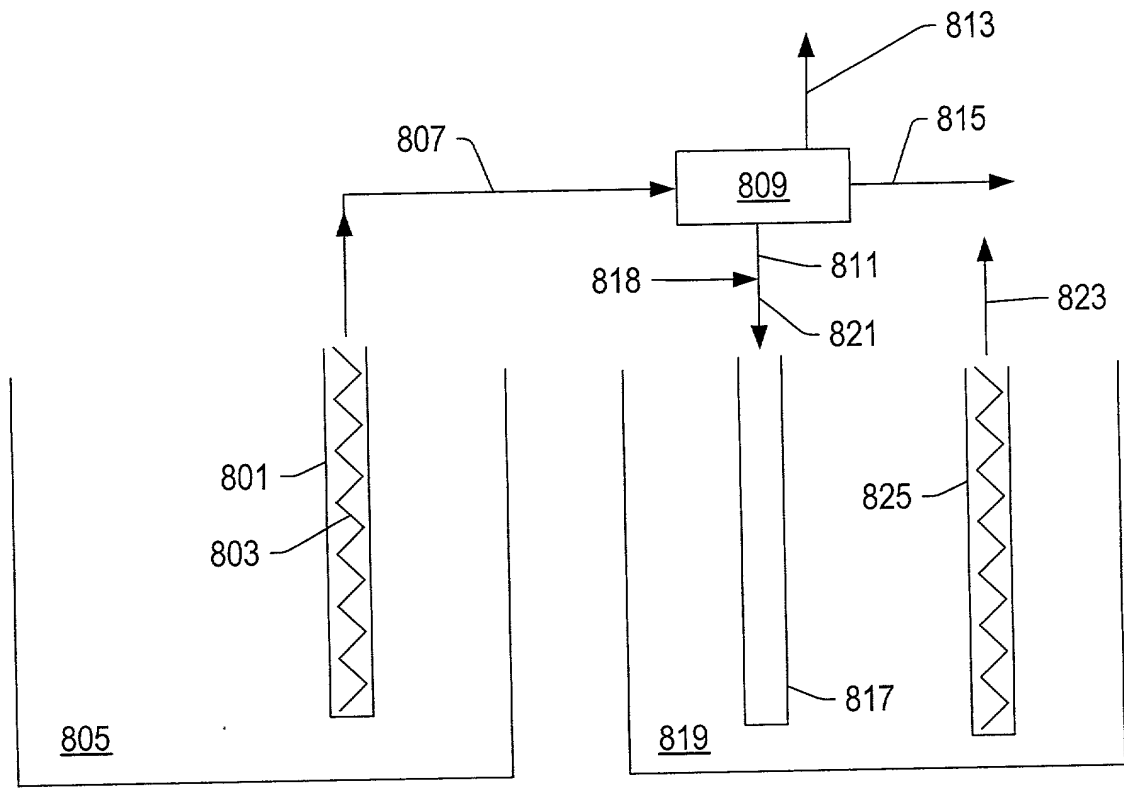


FIG. 29

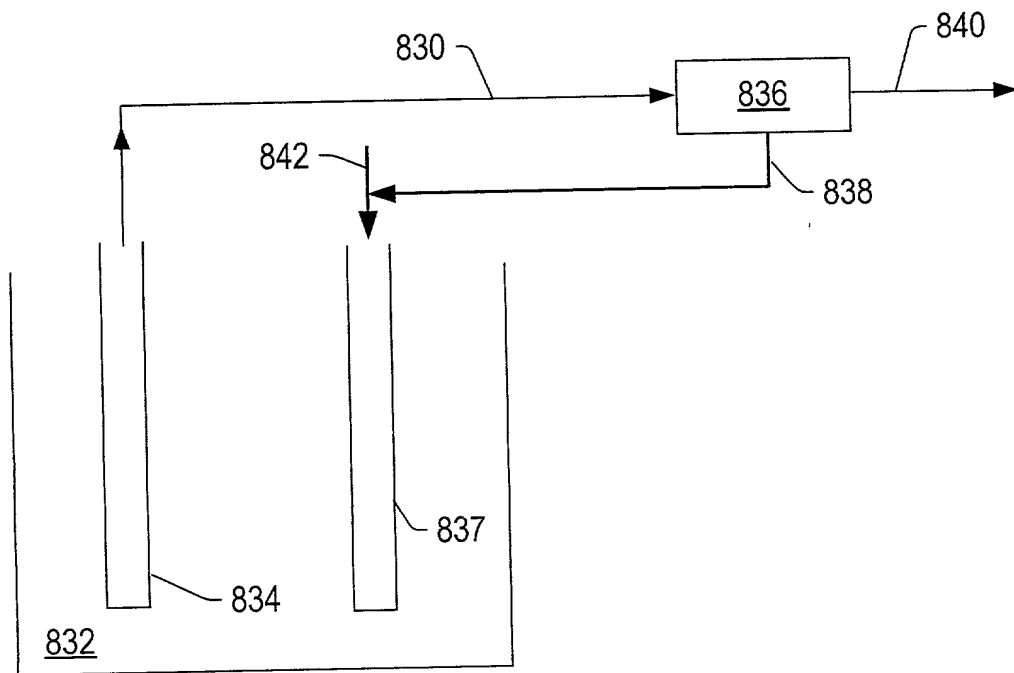


FIG. 30

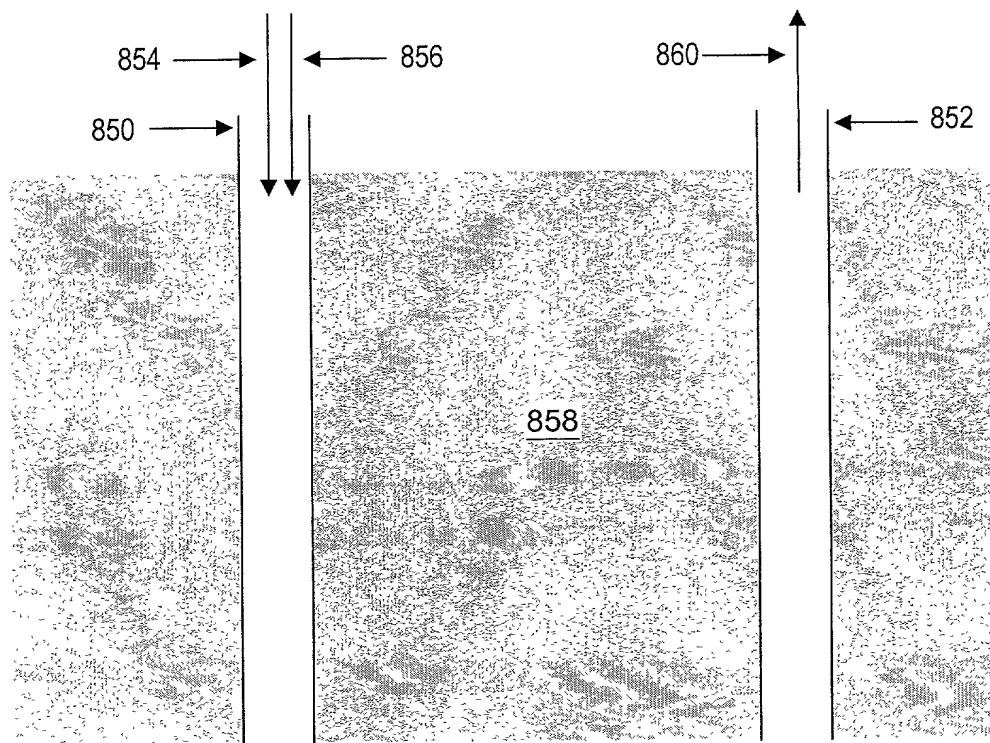


FIG. 31

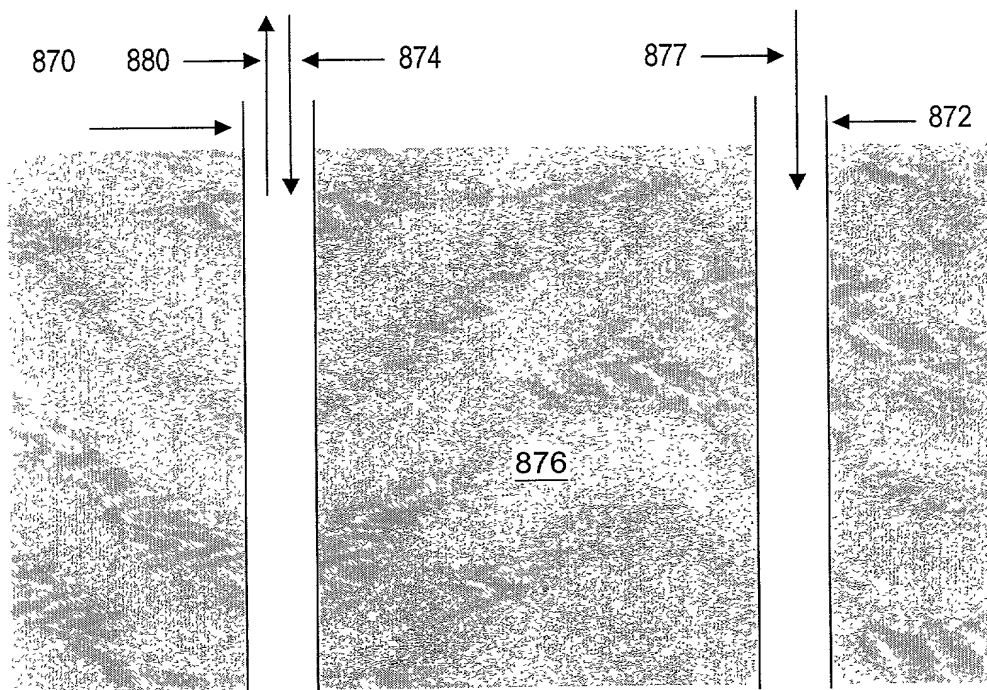


FIG. 32

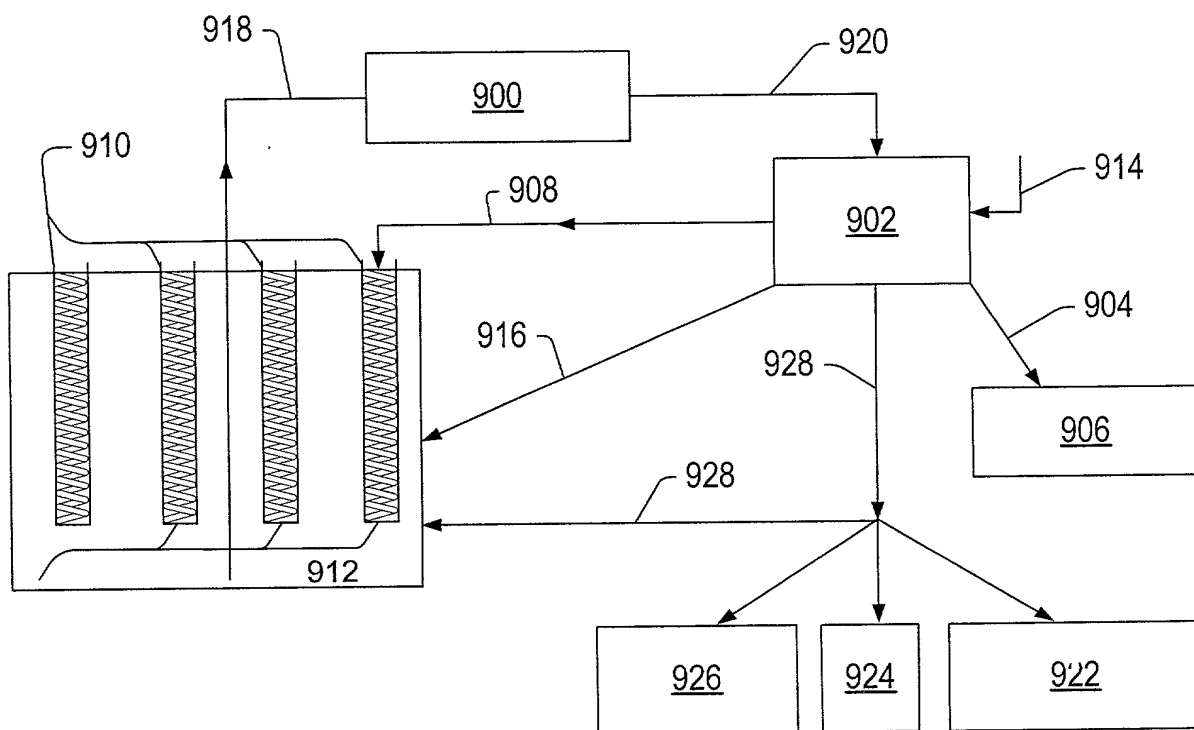


FIG. 33

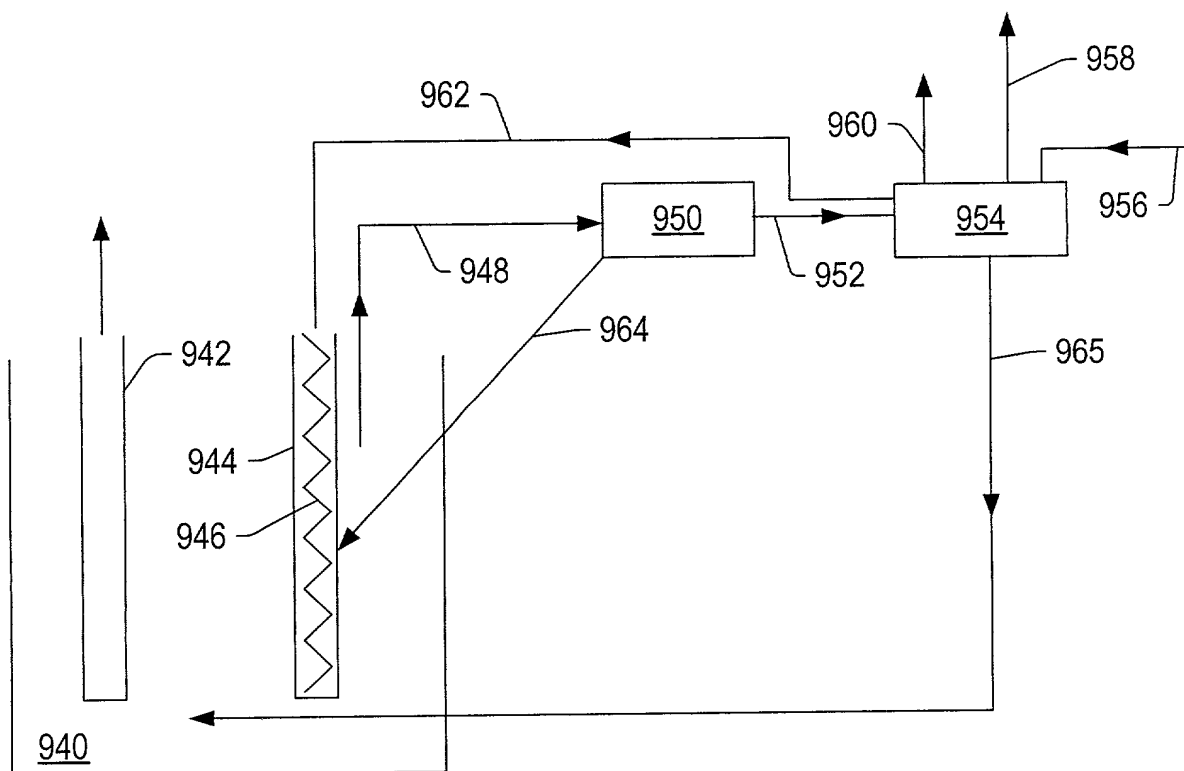


FIG. 34

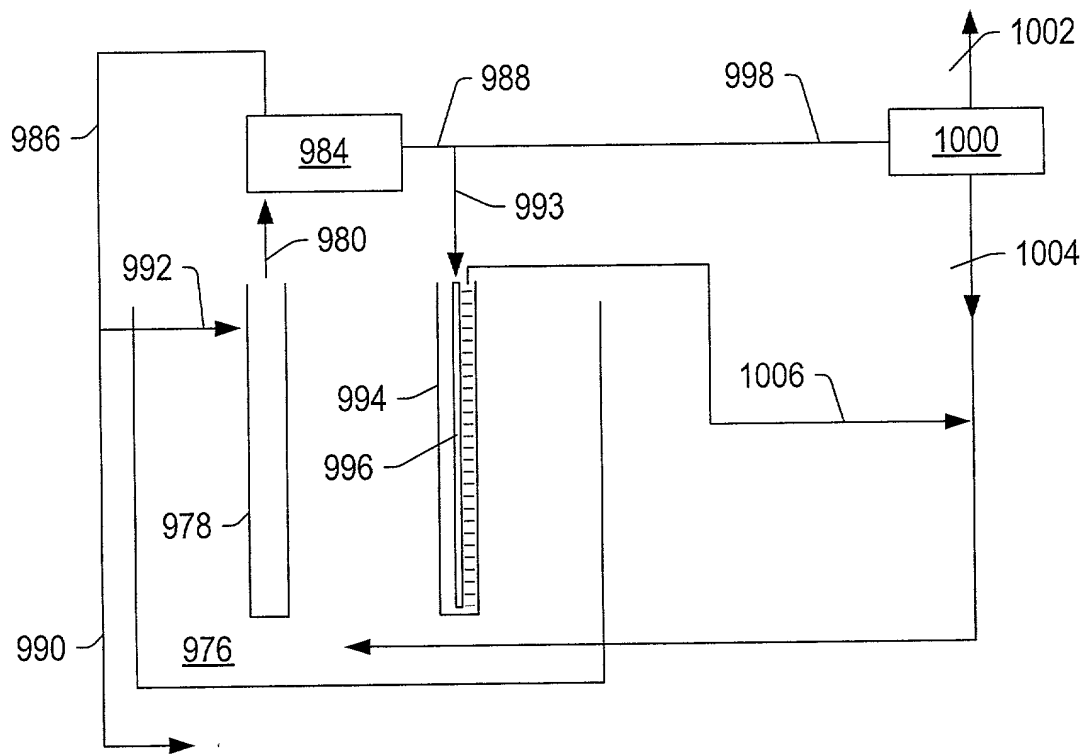


FIG. 35

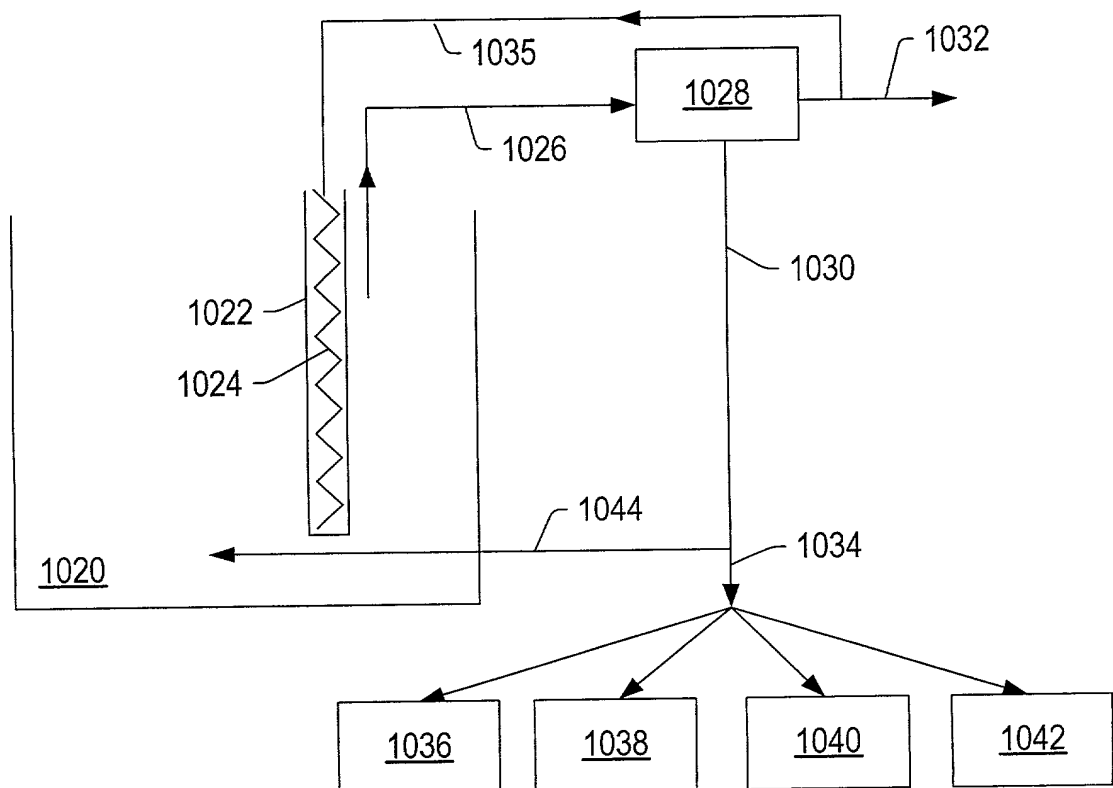


FIG. 36

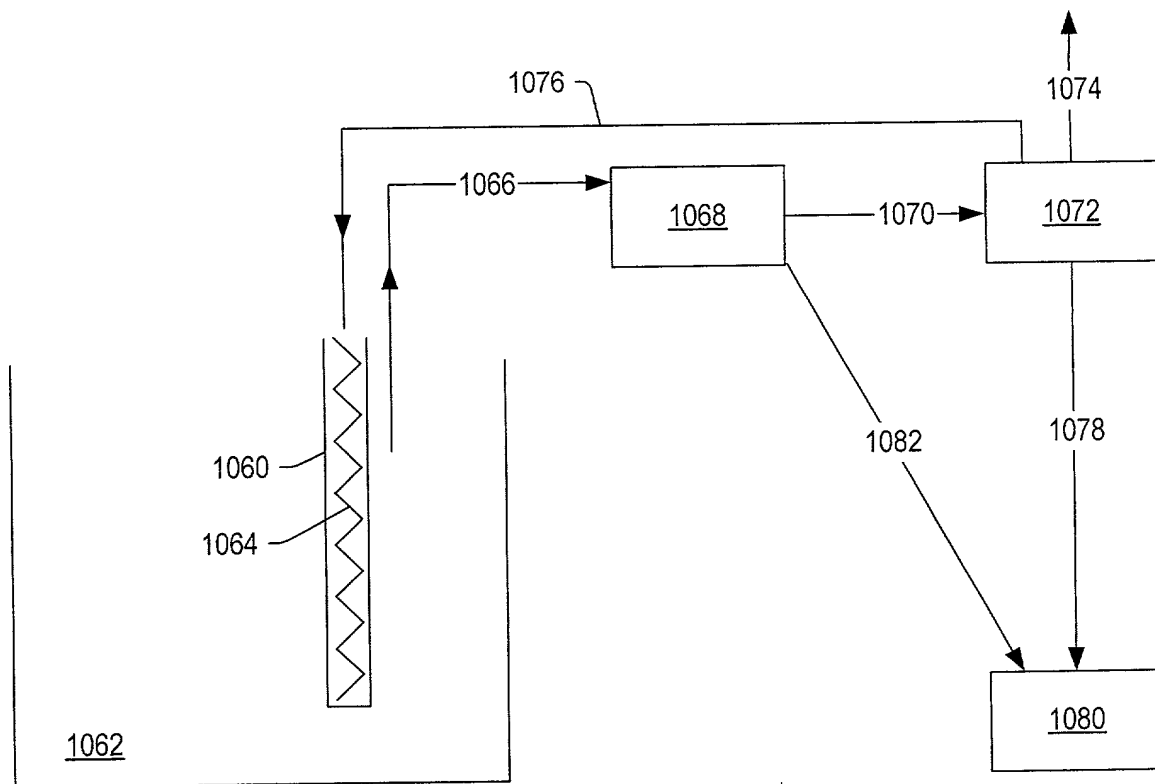


FIG. 37

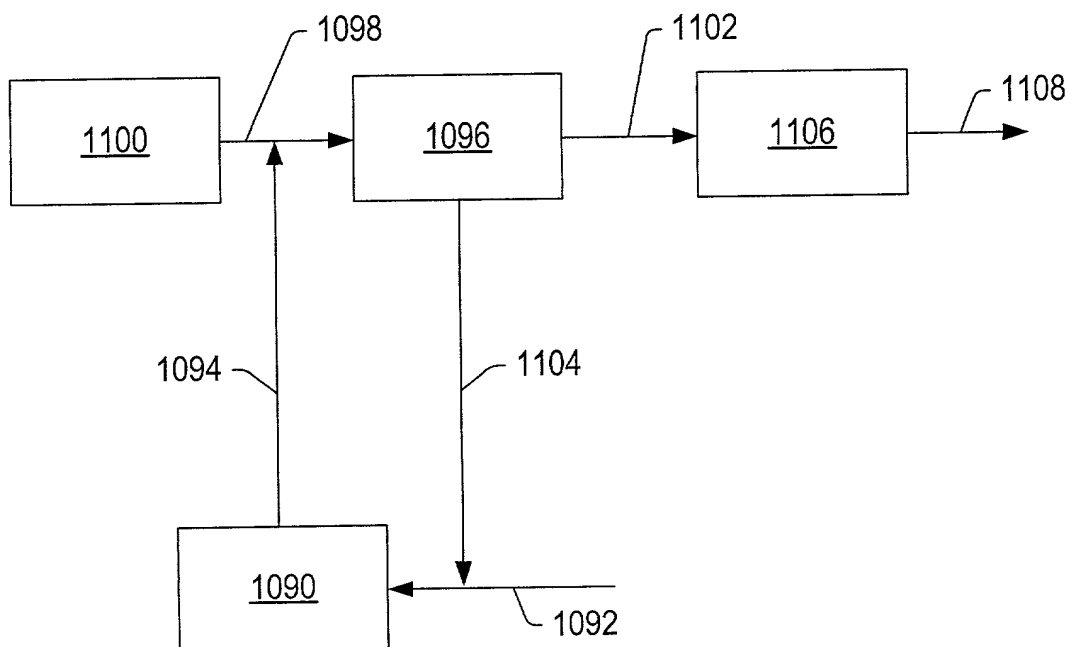
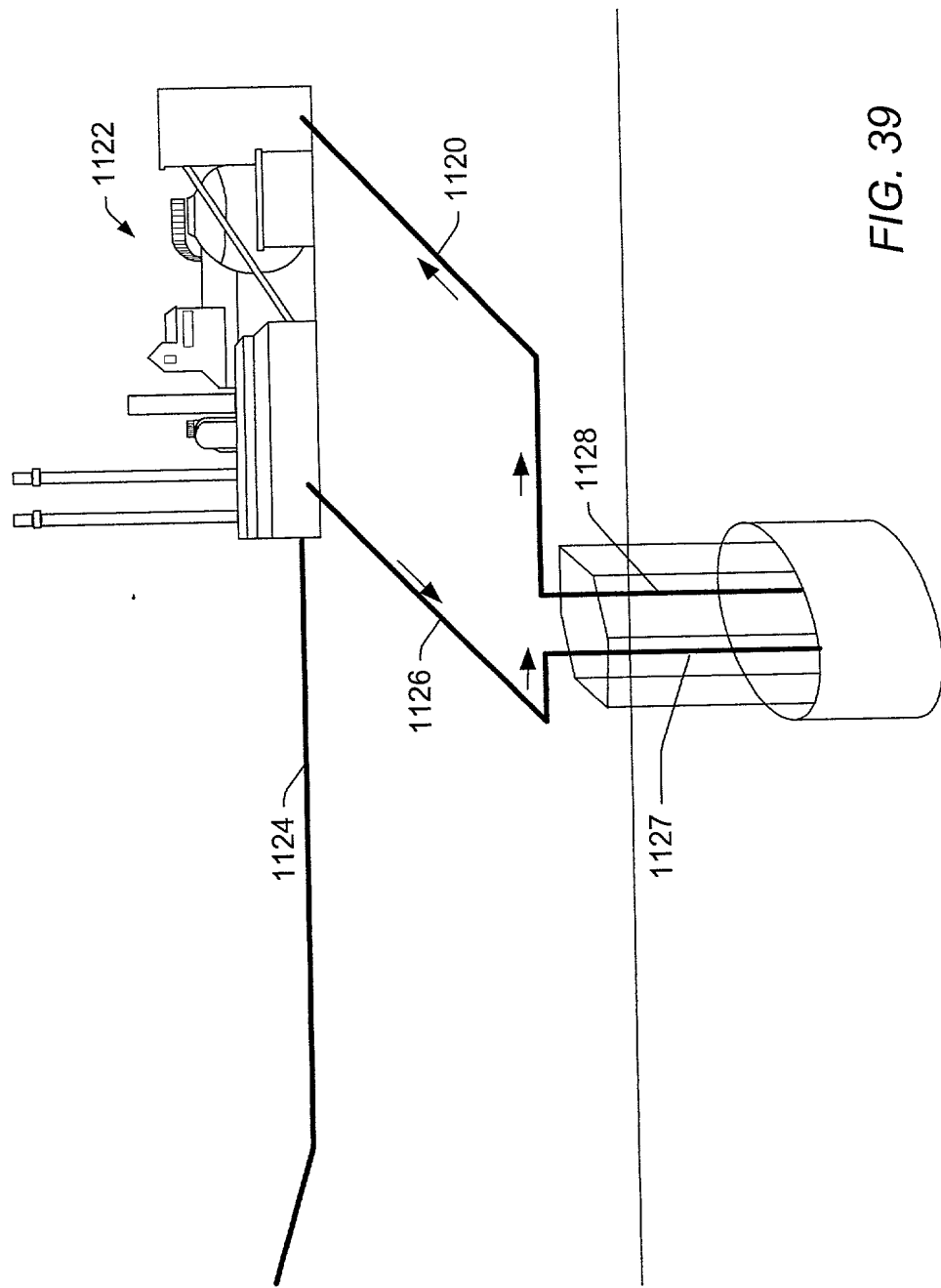


FIG. 38



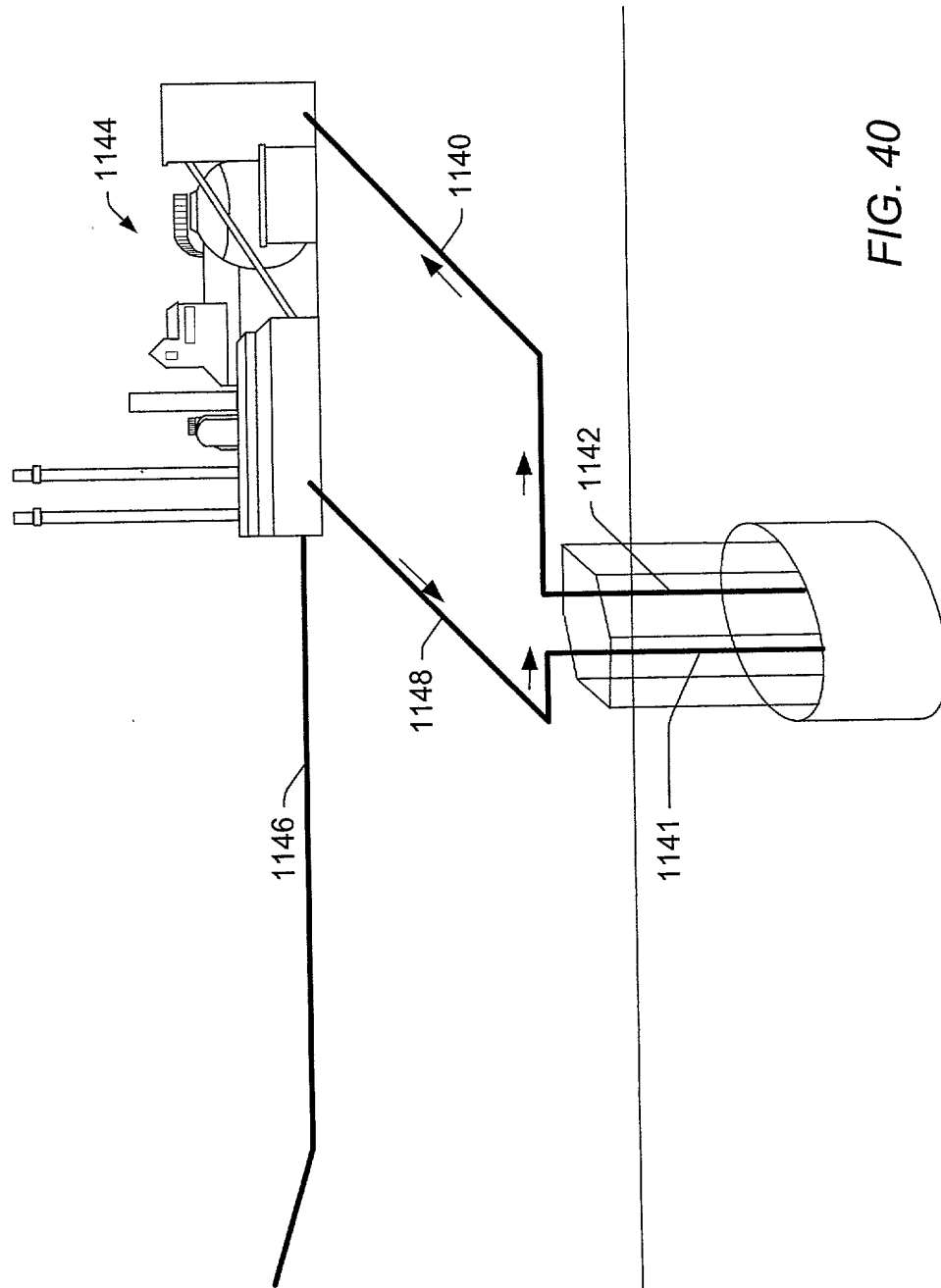


FIG. 40

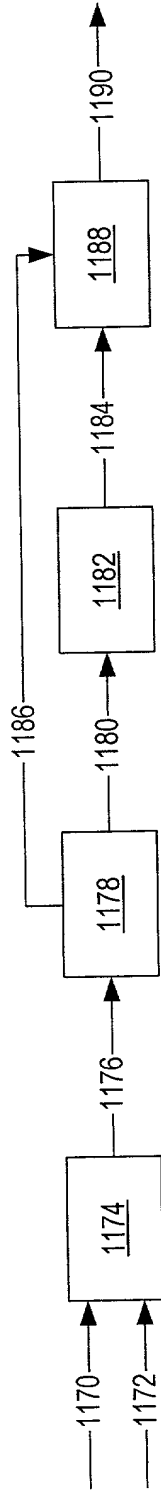


FIG. 41

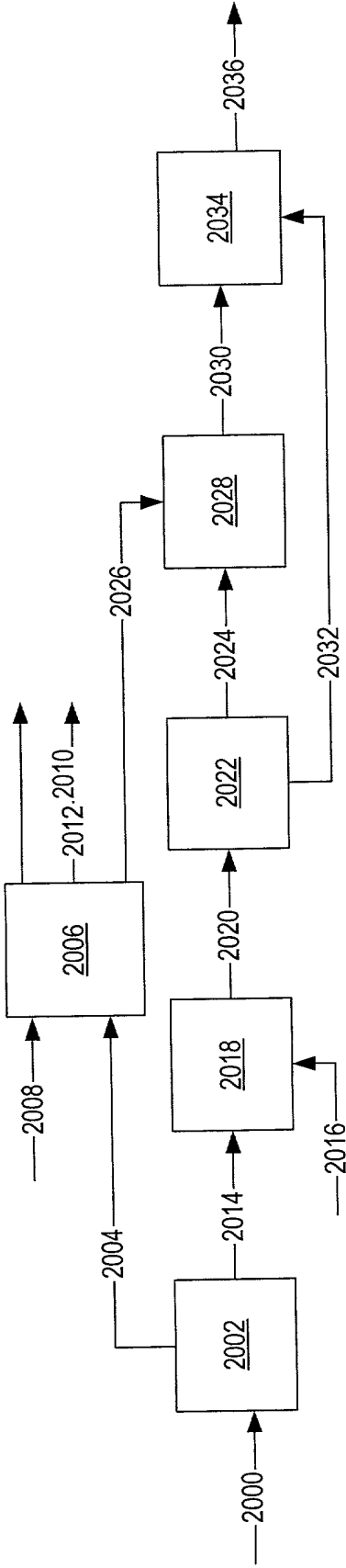


FIG. 42

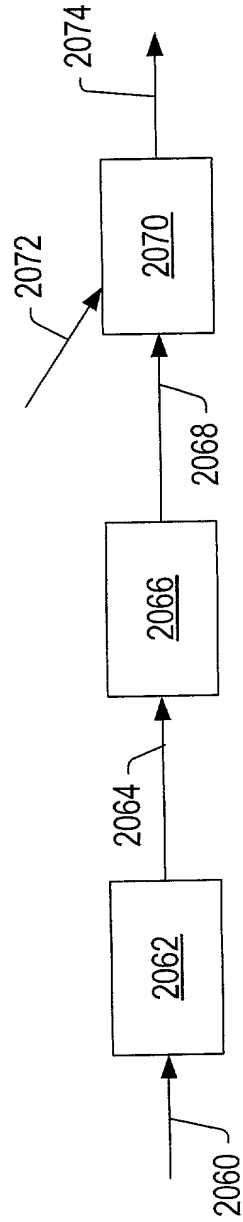


FIG. 43

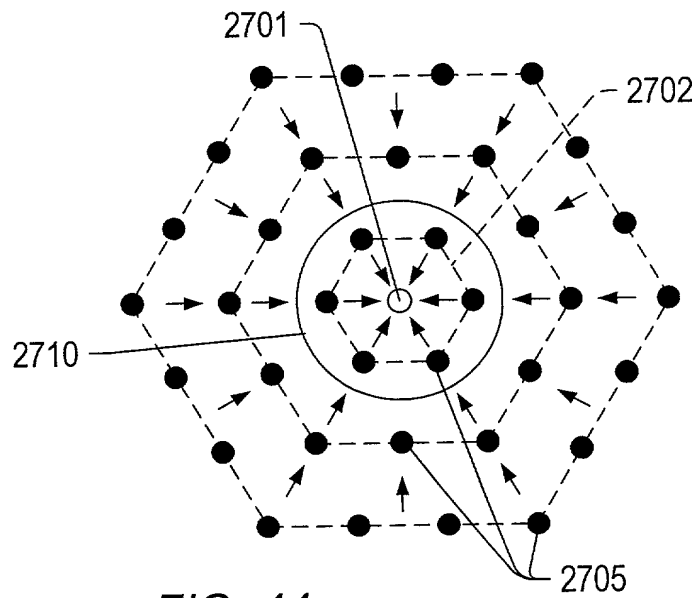


FIG. 44

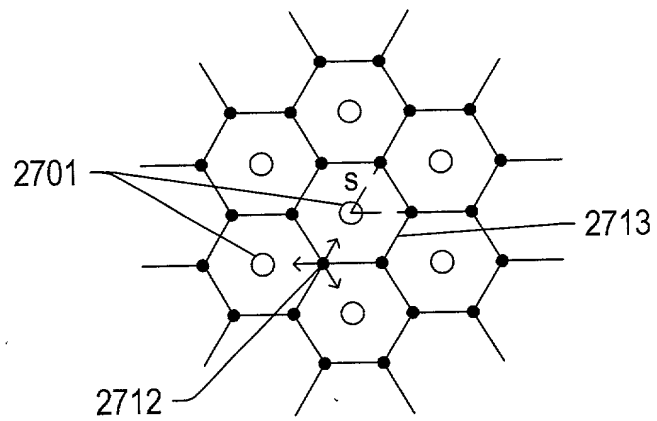


FIG. 45

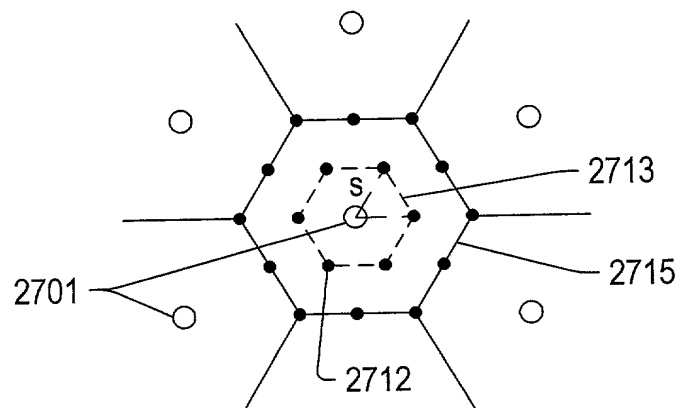


FIG. 46

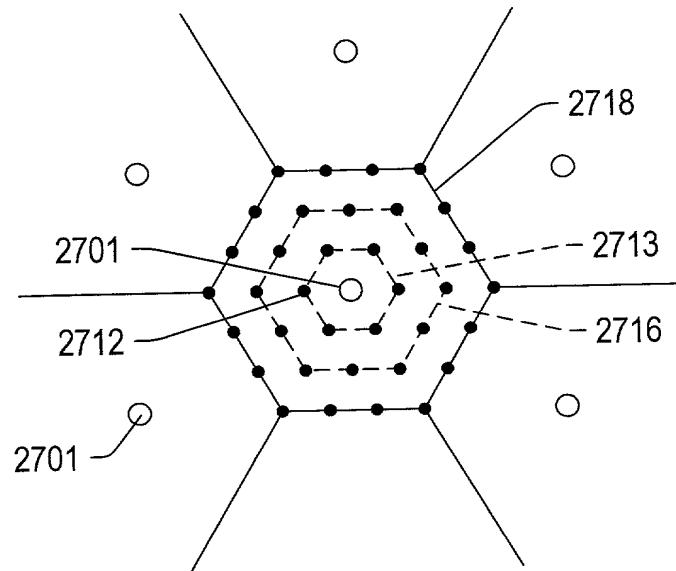


FIG. 47

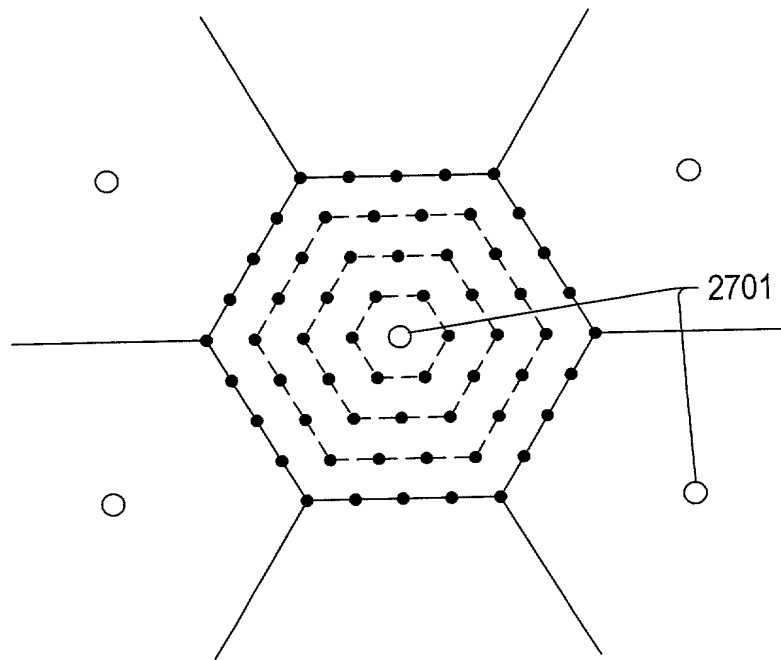


FIG. 48

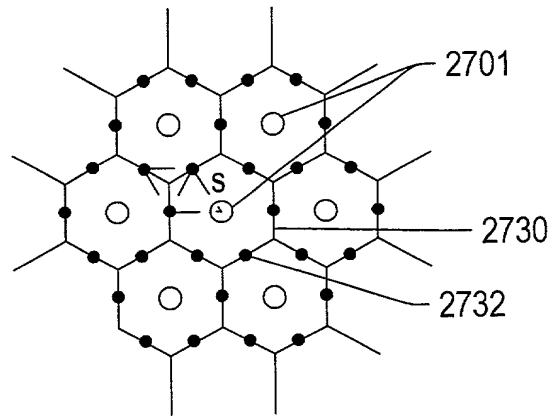


FIG. 49

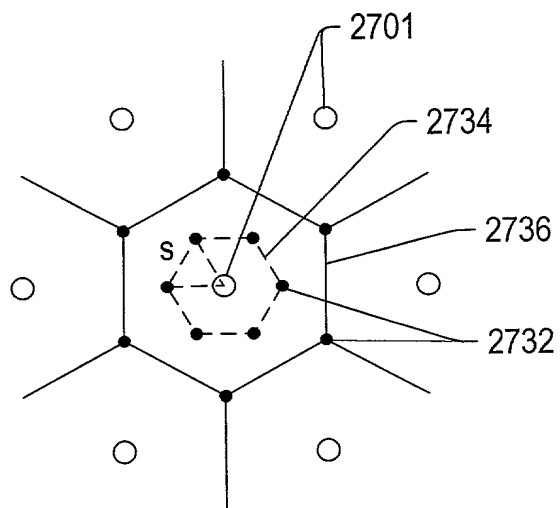


FIG. 50

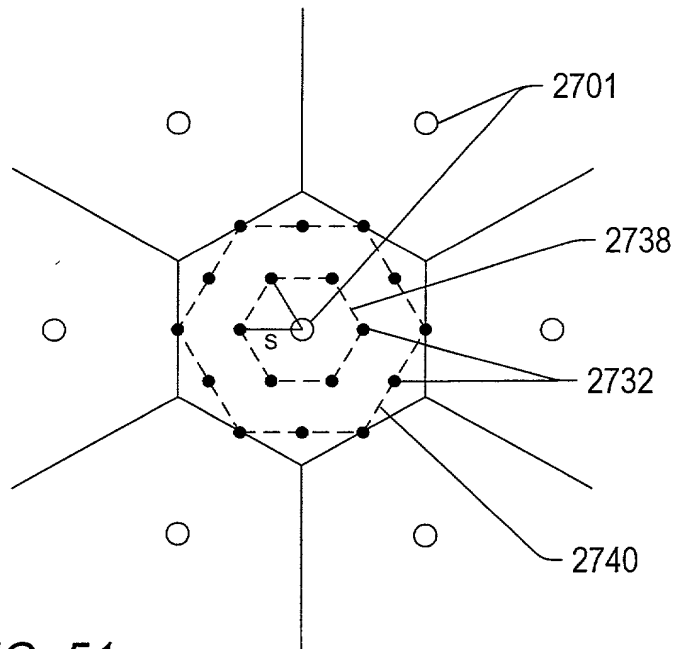


FIG. 51

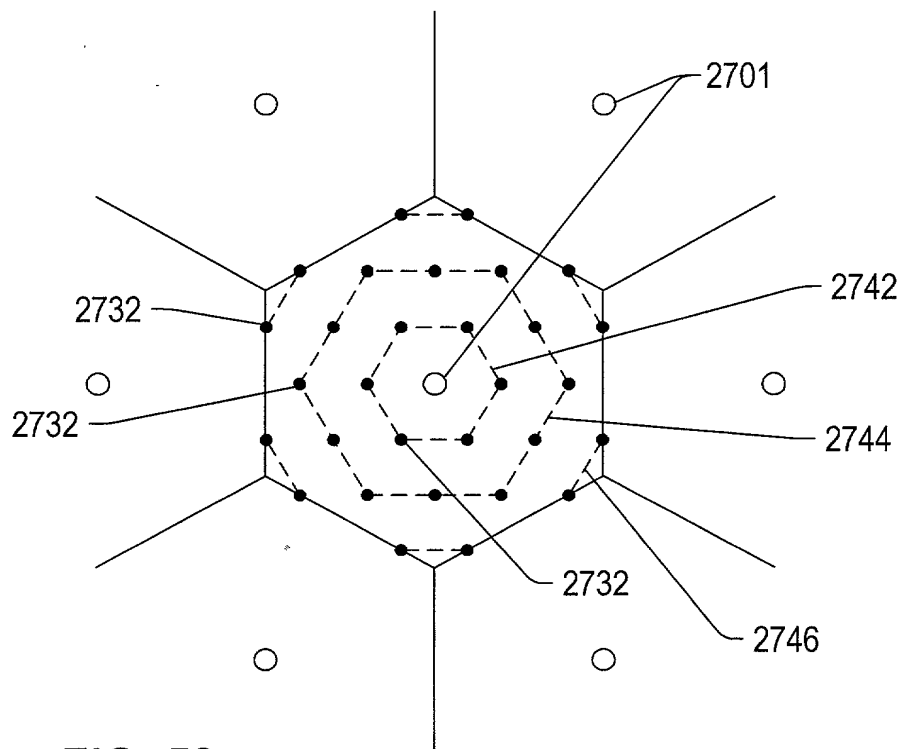


FIG. 52

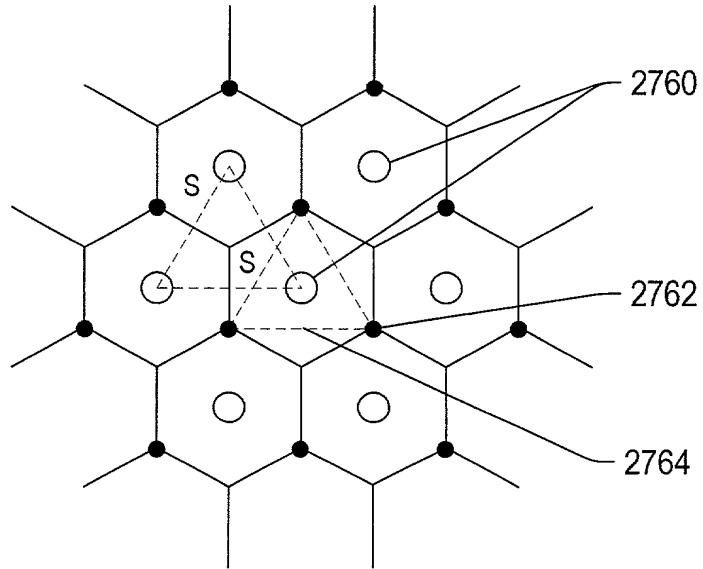


FIG. 53

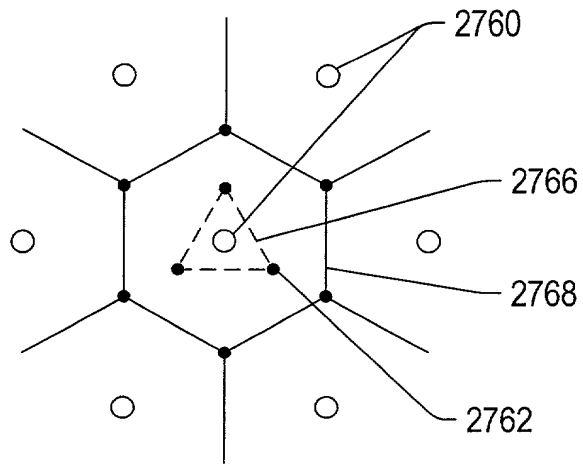


FIG. 54

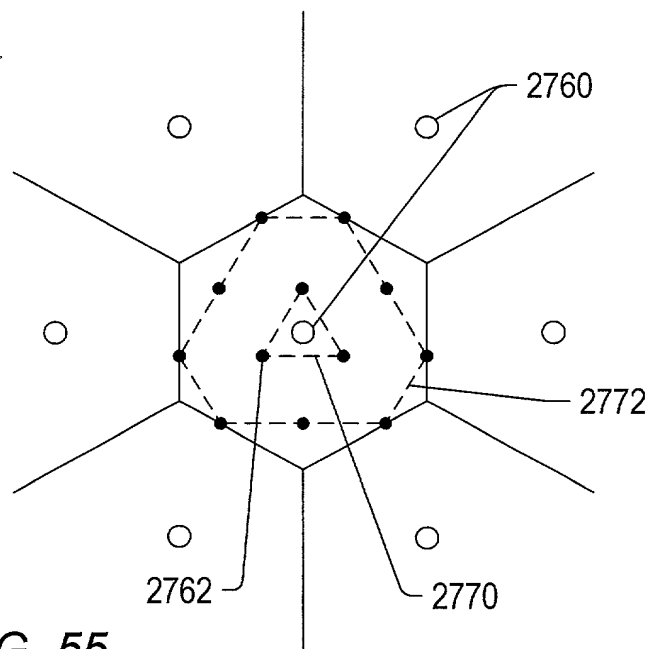


FIG. 55

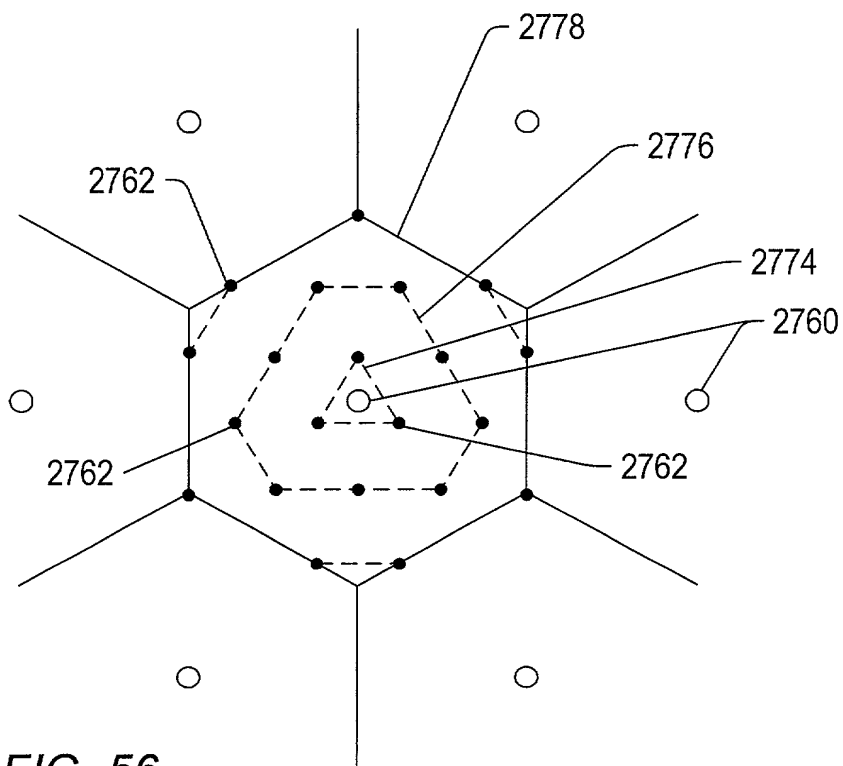


FIG. 56

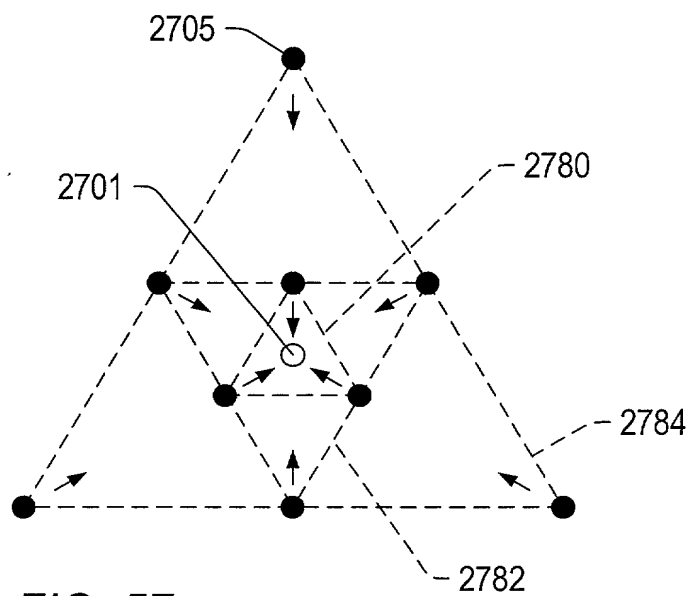


FIG. 57

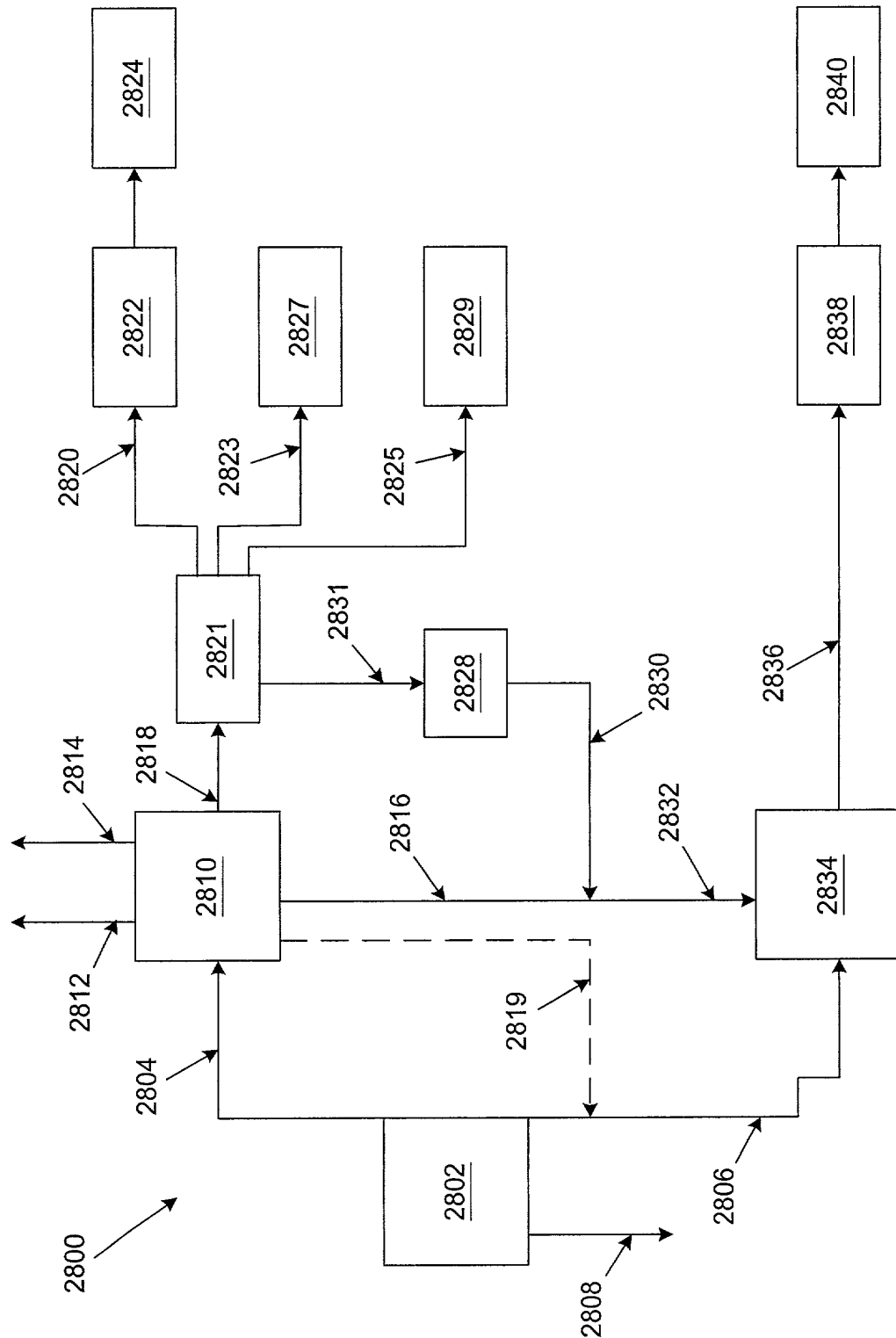
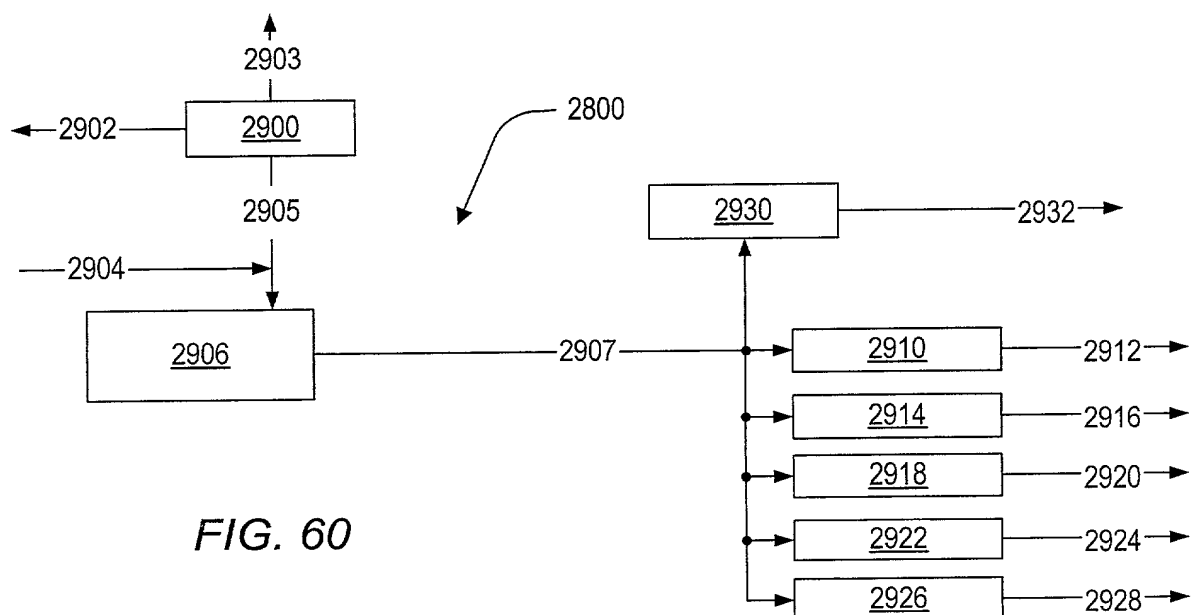
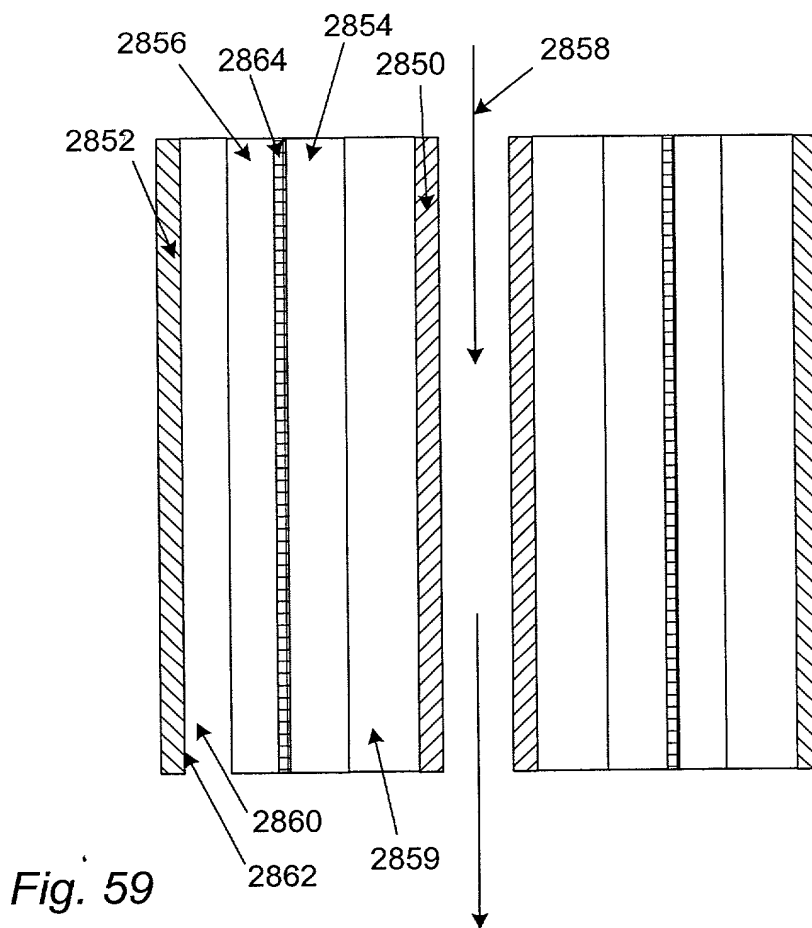


Fig. 58



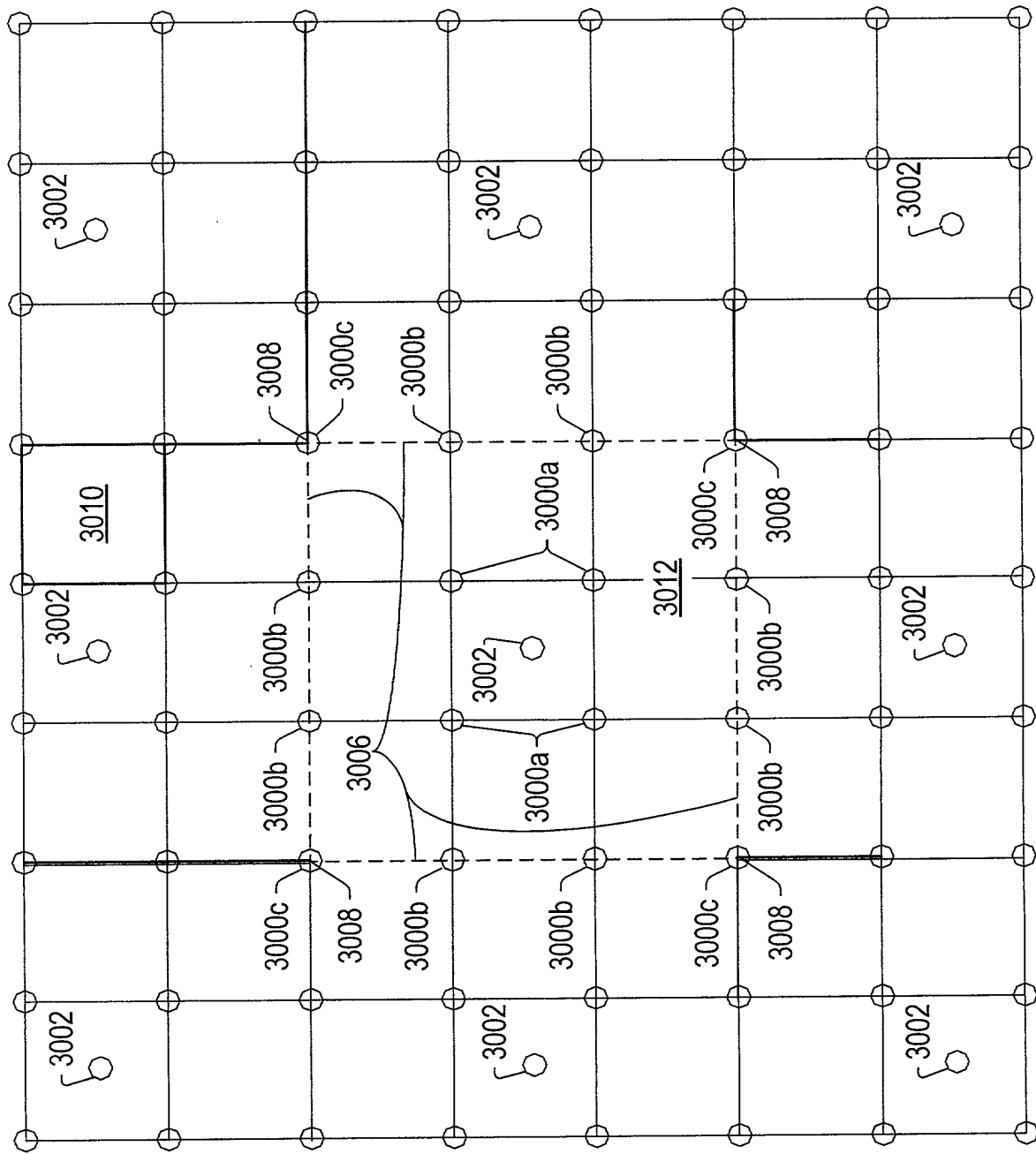


FIG. 61

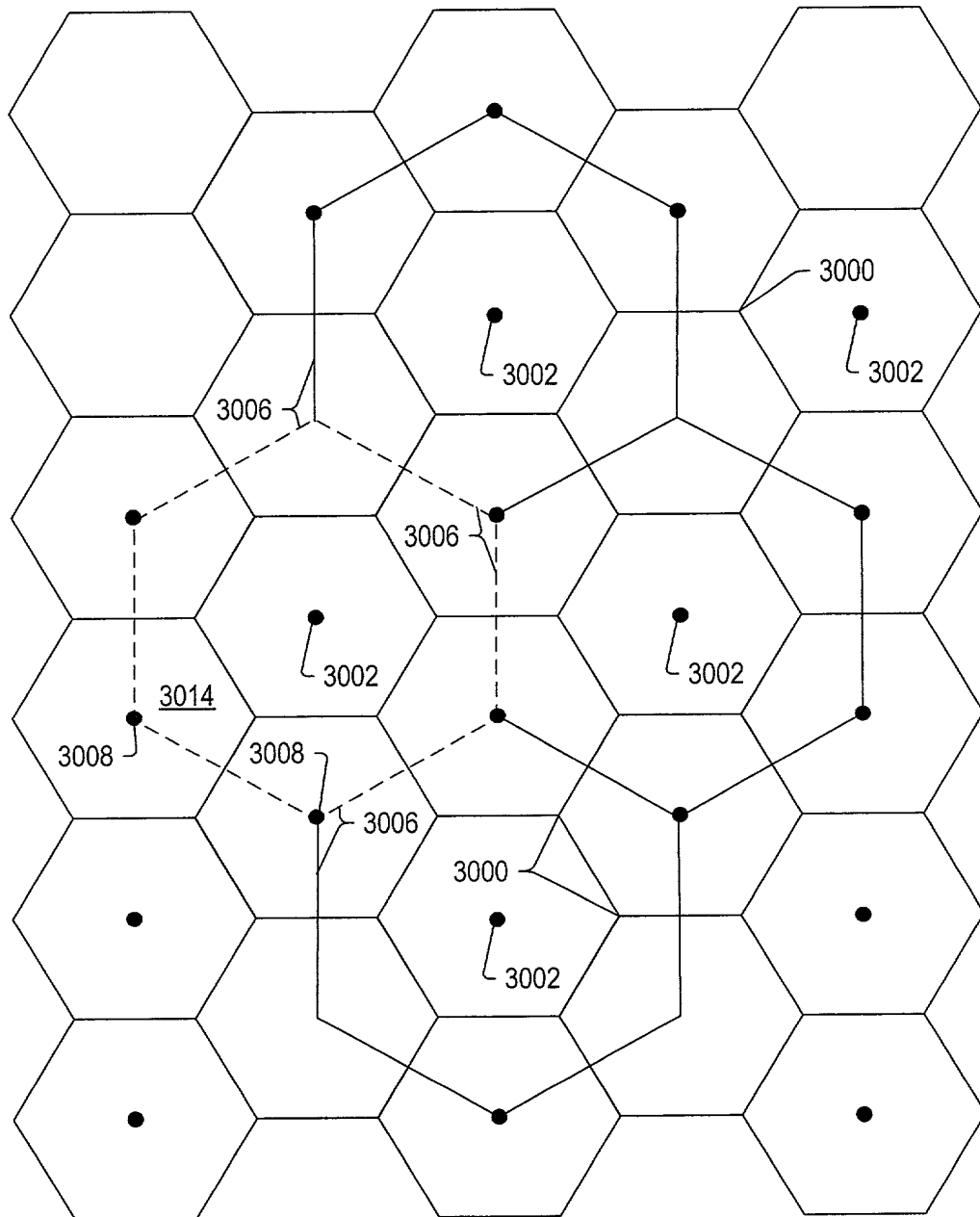


FIG. 62

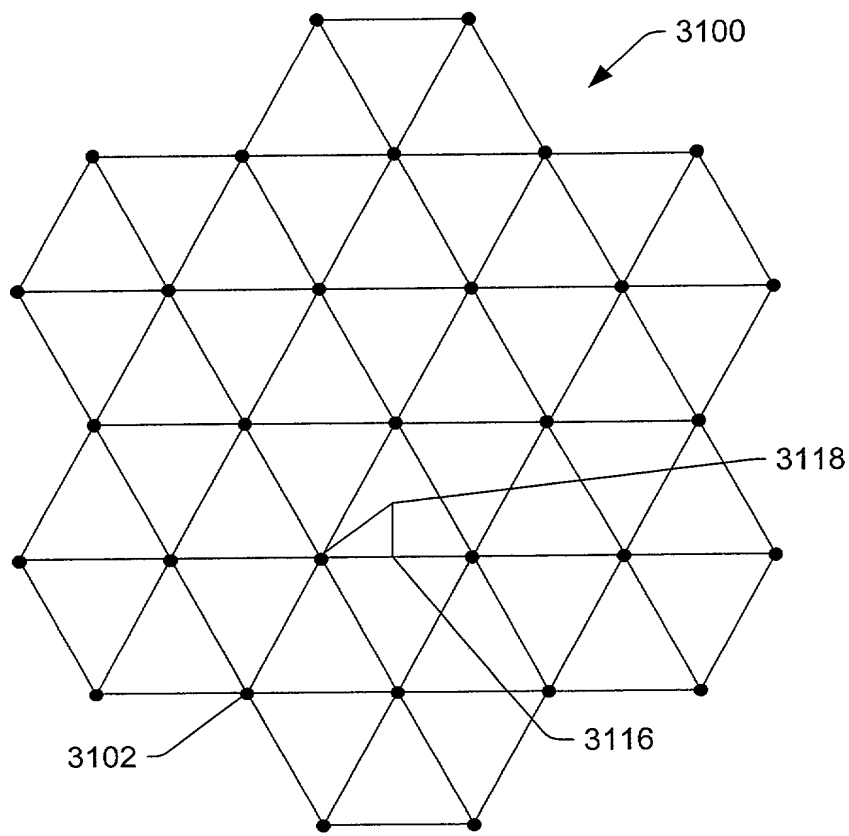


FIG. 63

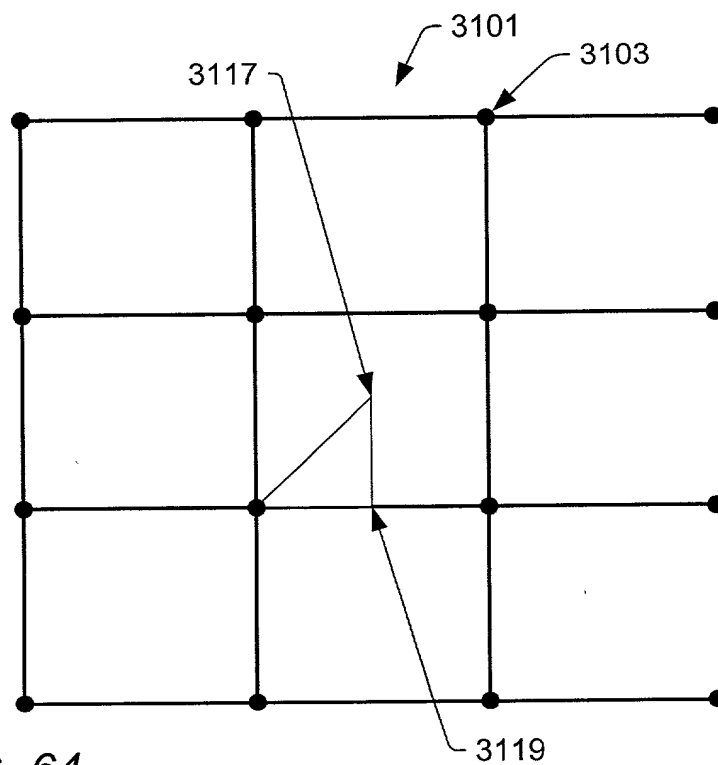


FIG. 64

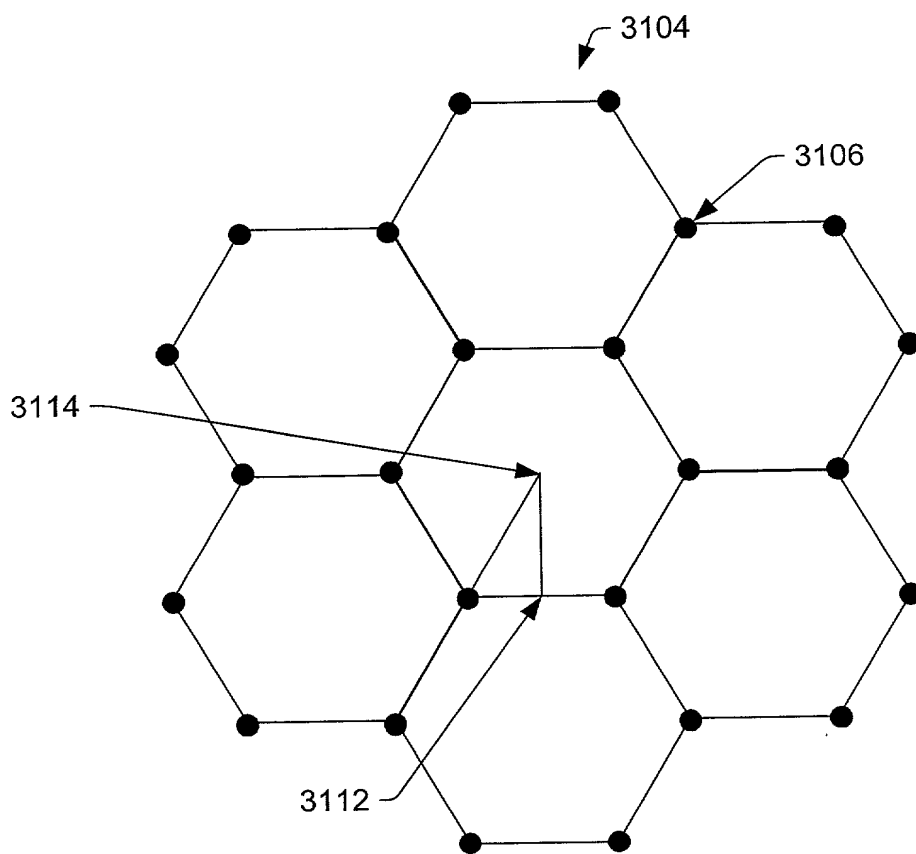


FIG. 65

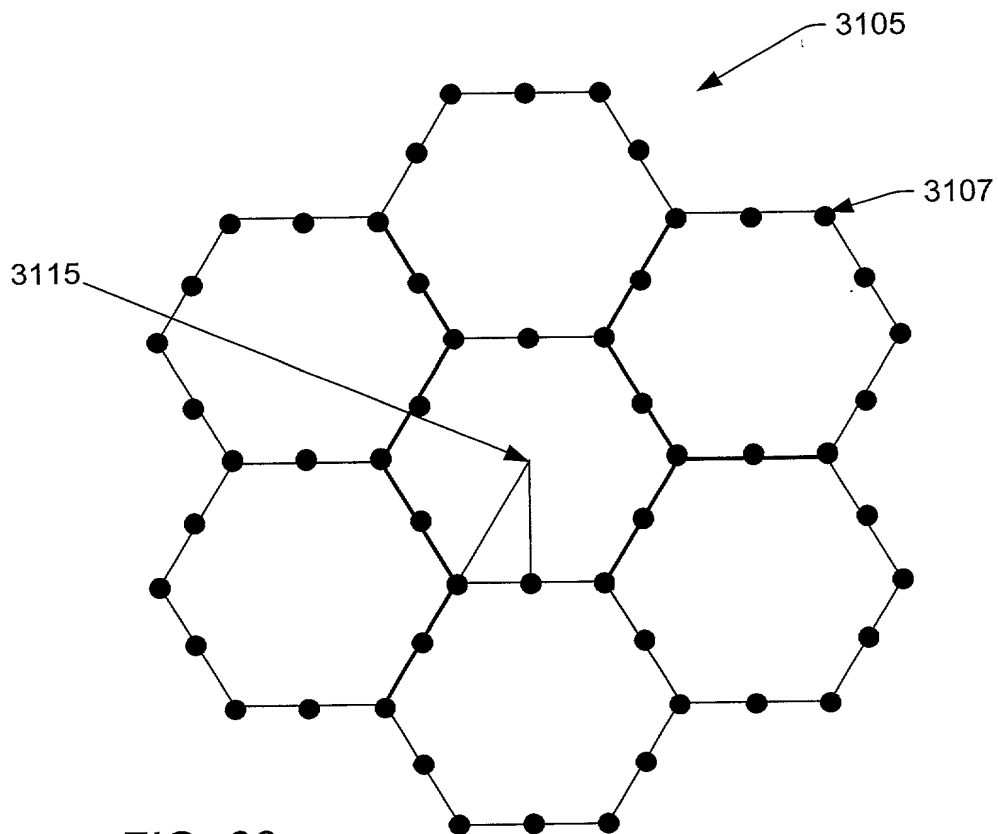


FIG. 66

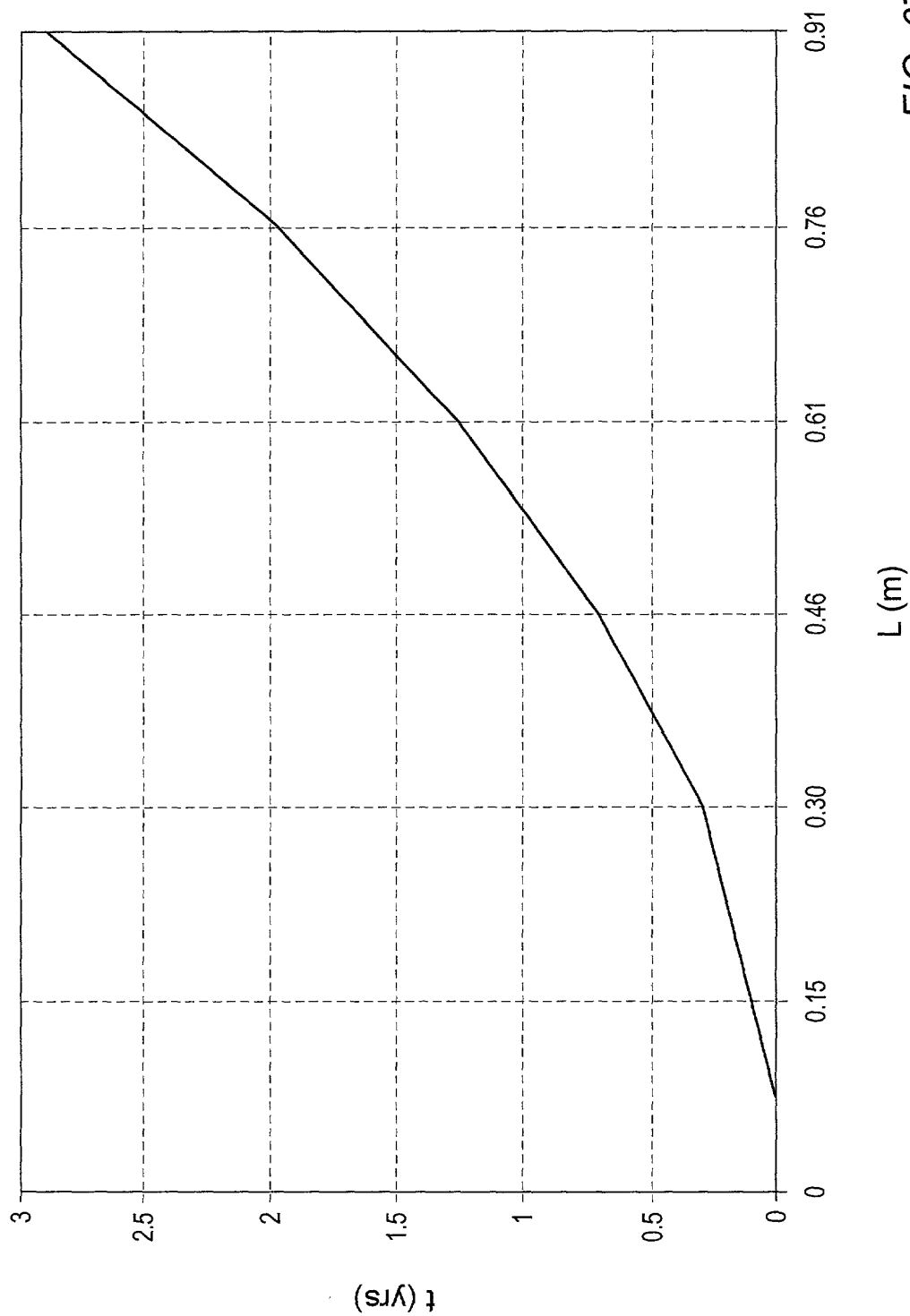


FIG. 67

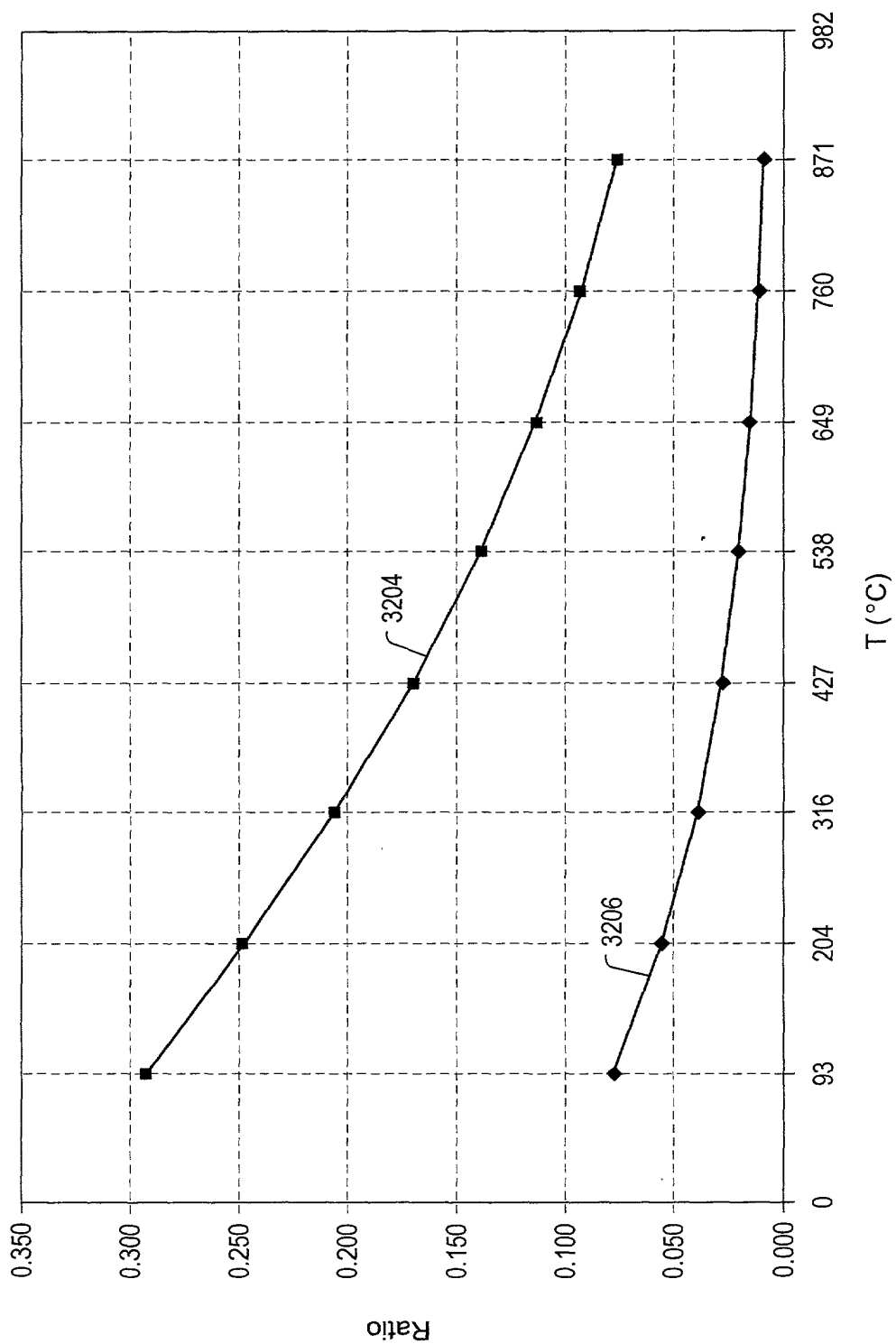


FIG. 68

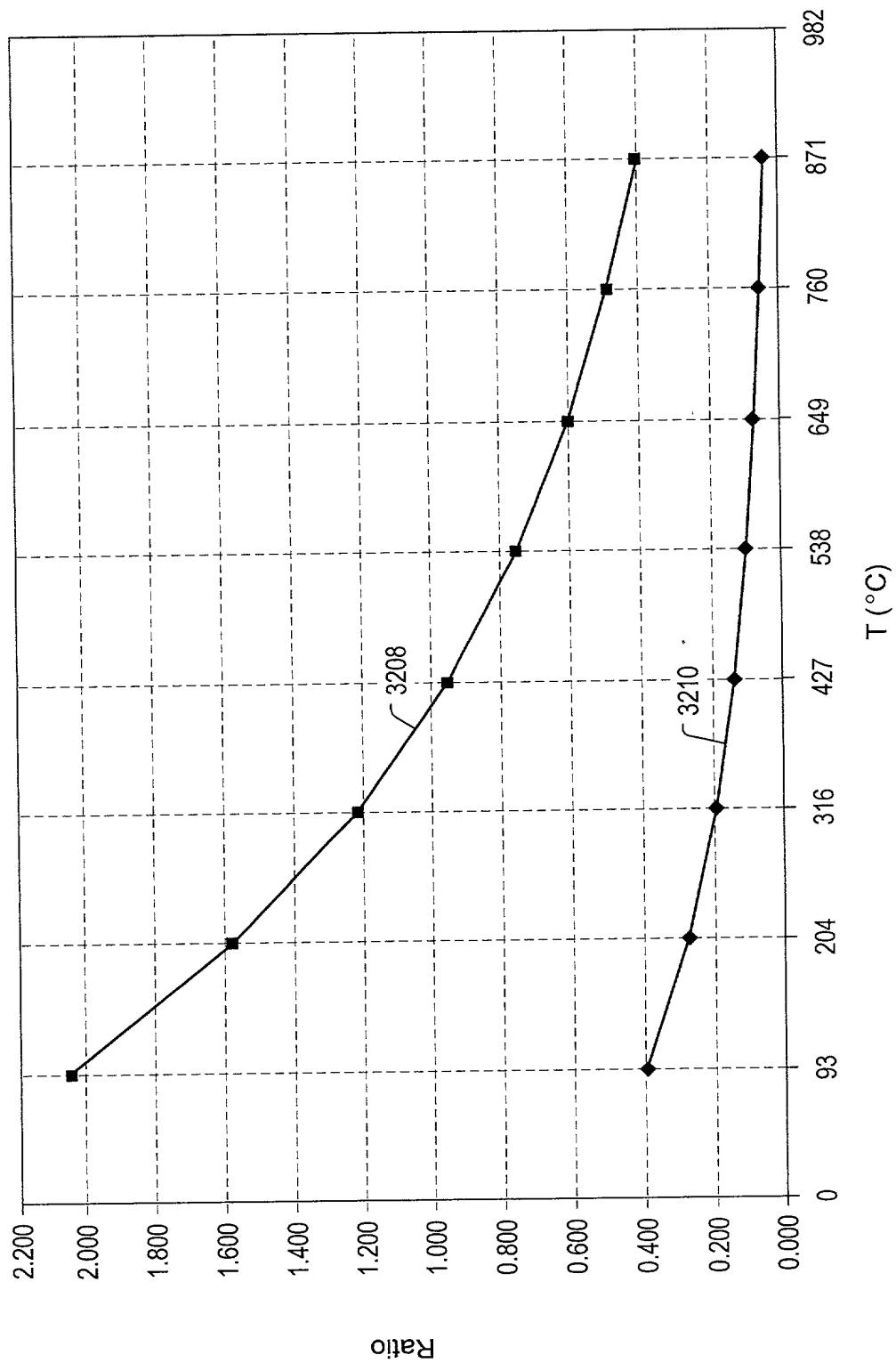


FIG. 69

FIG. 70

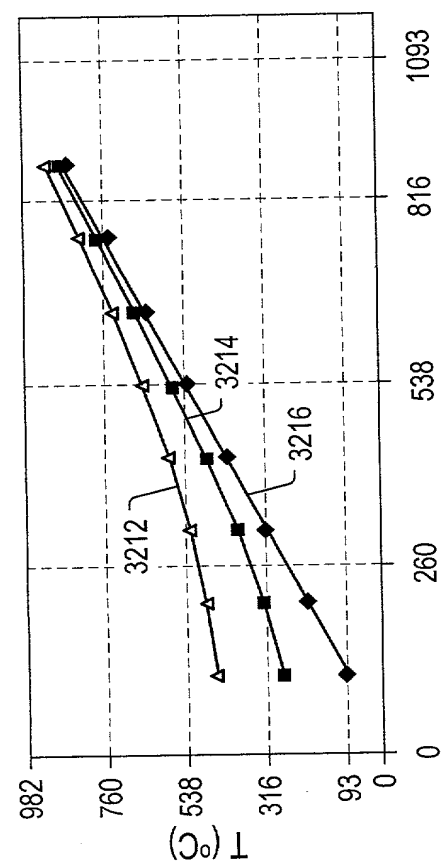


FIG. 70

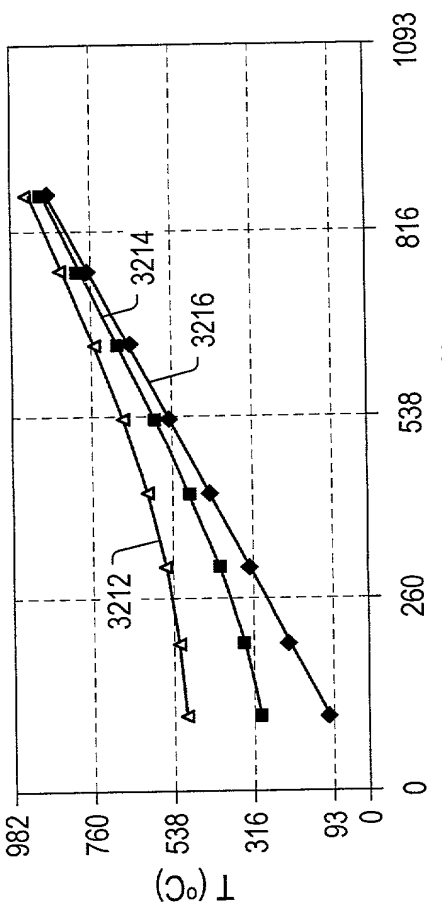


FIG. 71

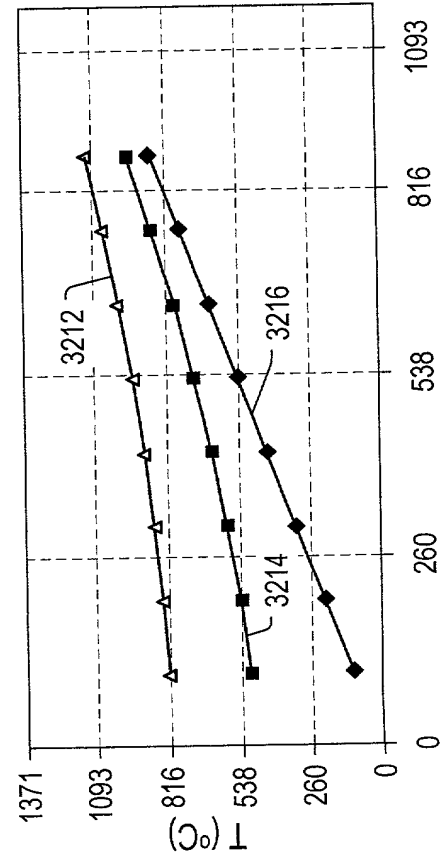


FIG. 72

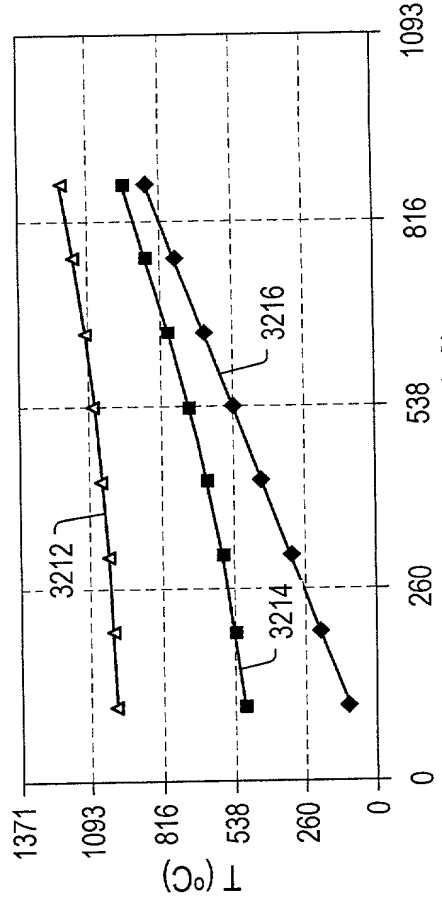


FIG. 73

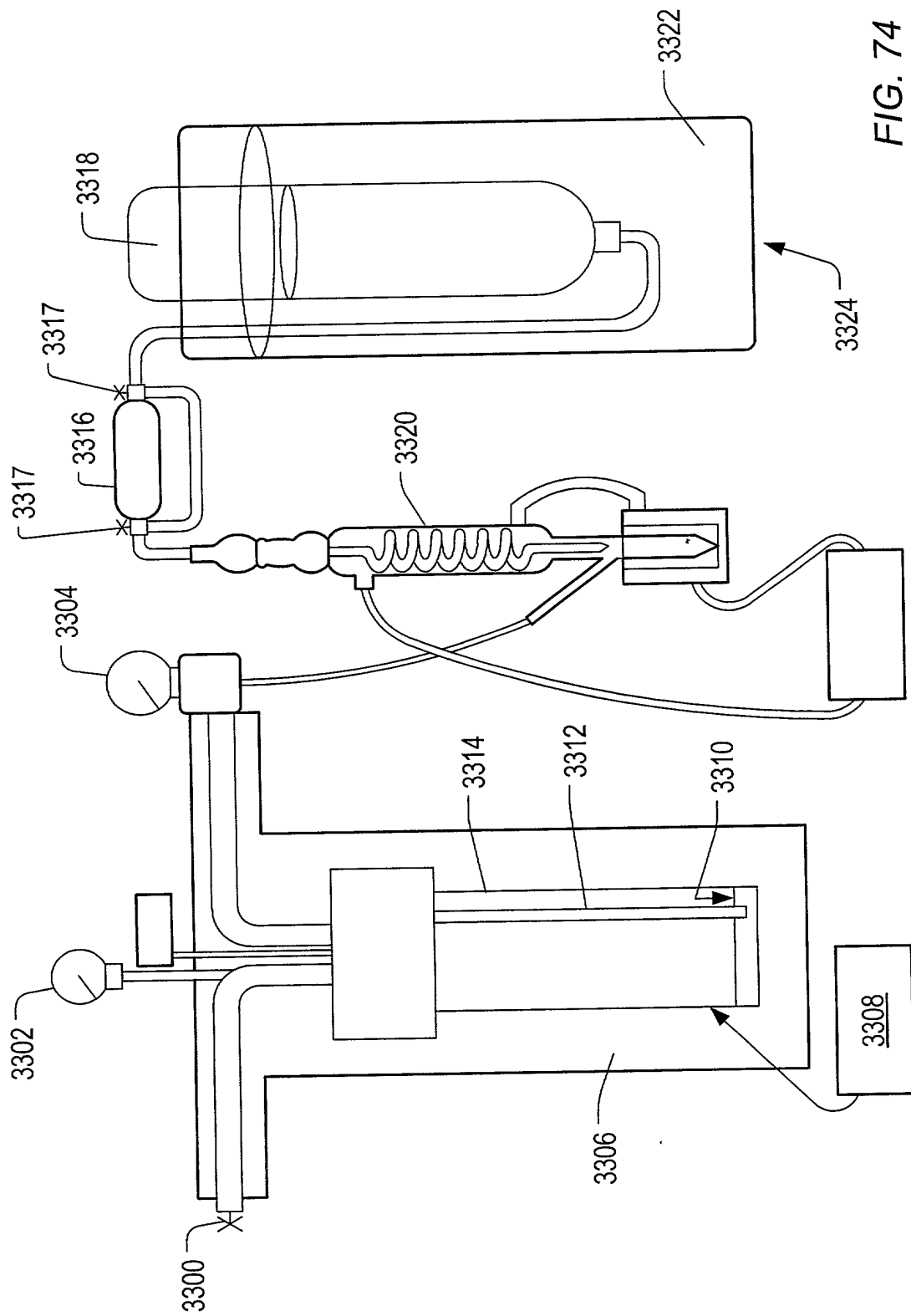


FIG. 74

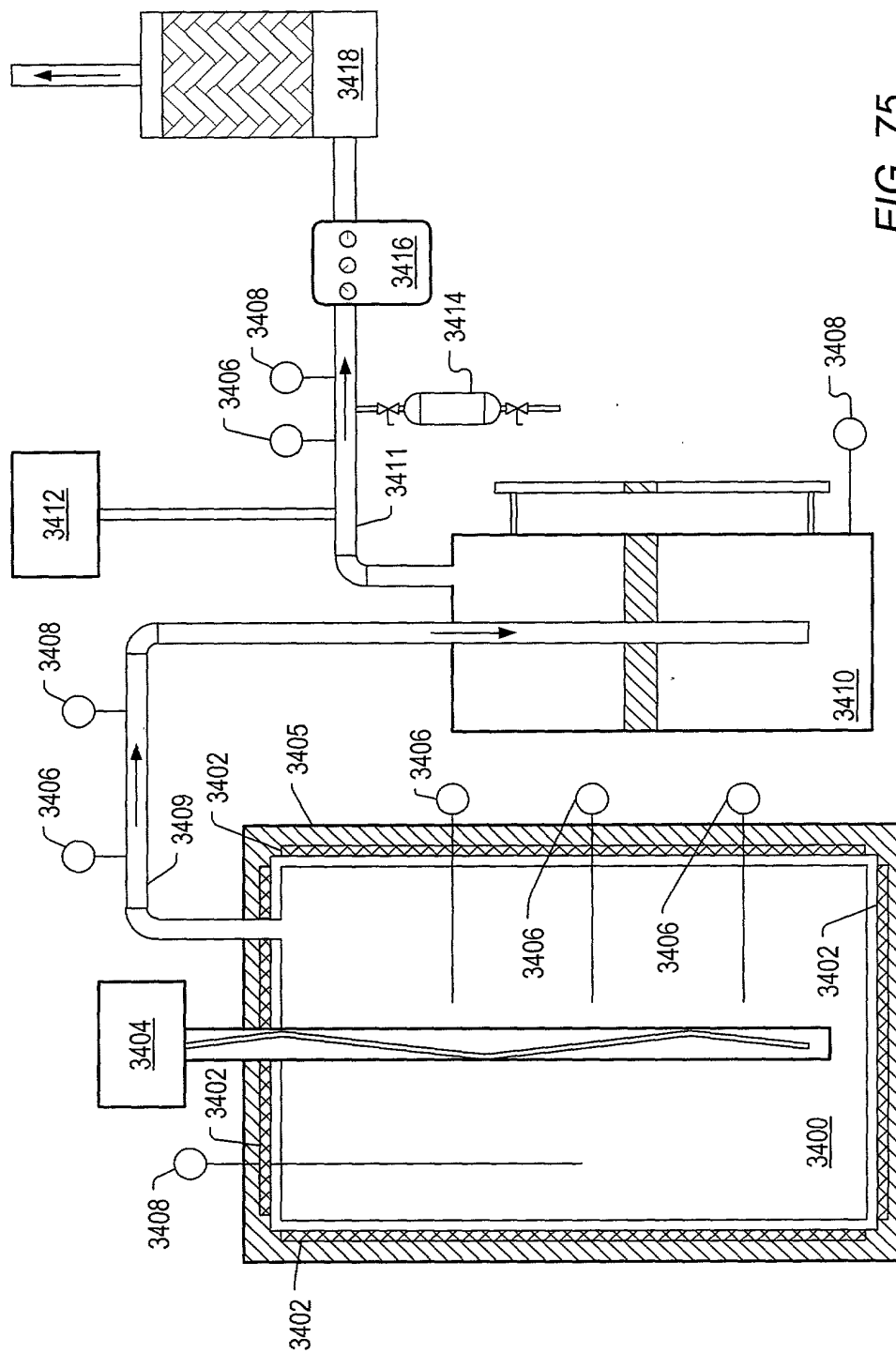


FIG. 75

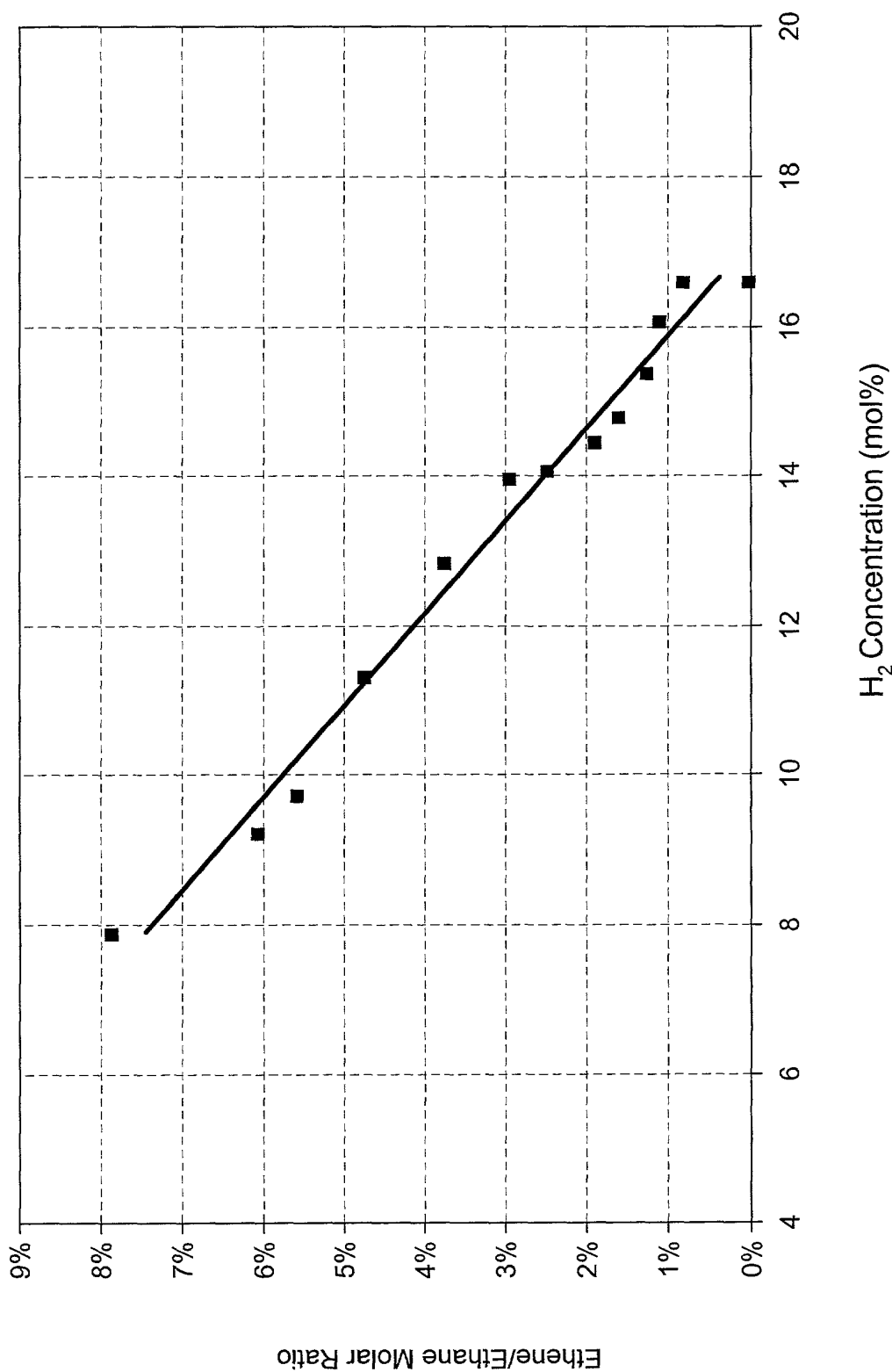


FIG. 76

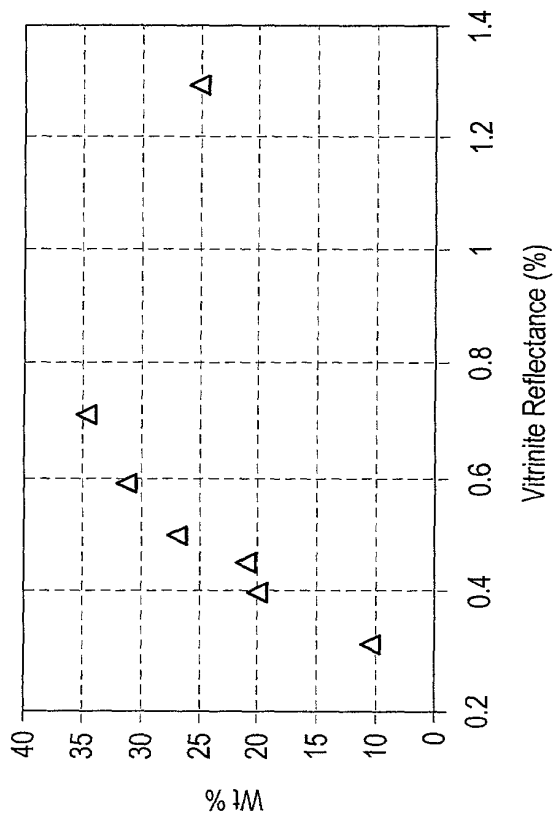


FIG. 77

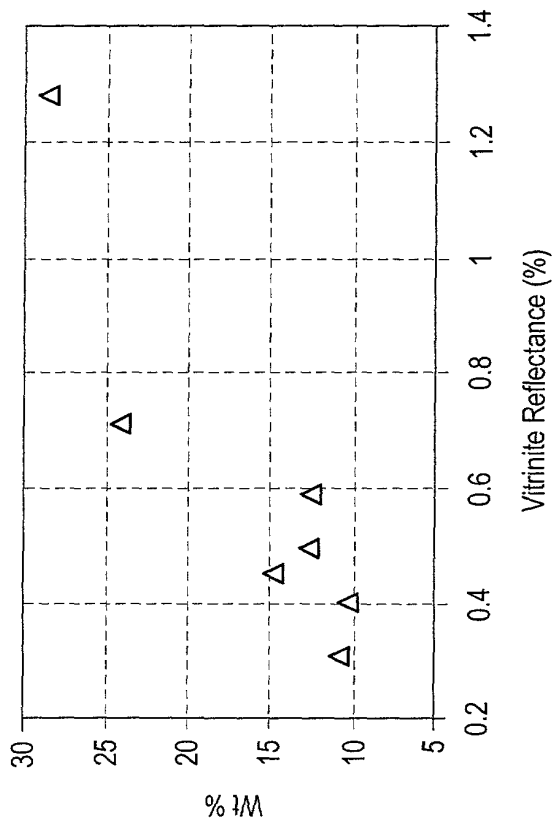


FIG. 78

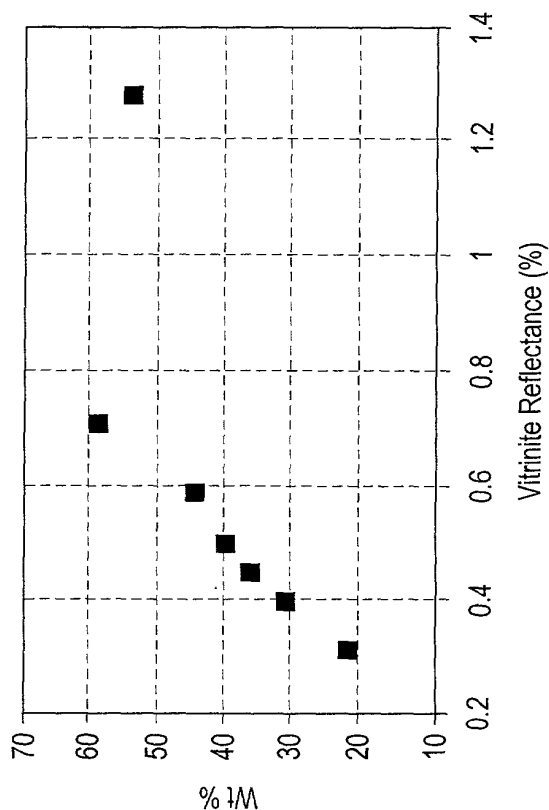


FIG. 79

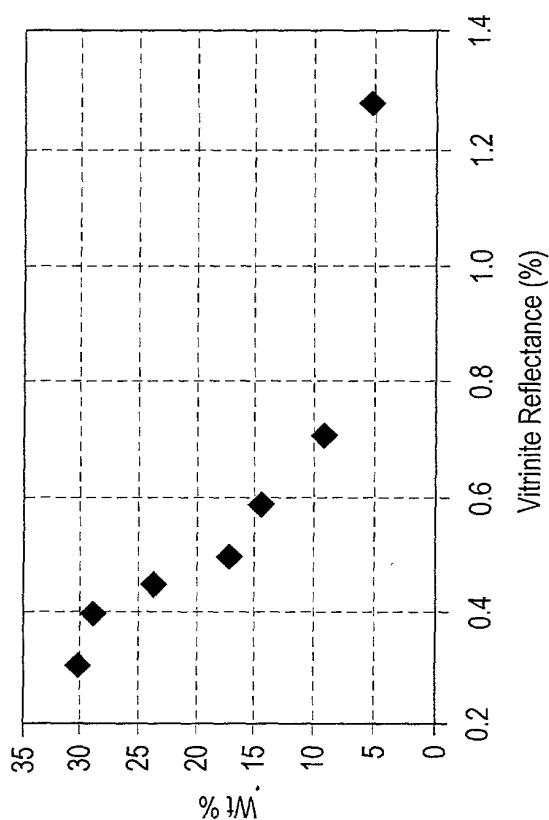


FIG. 80

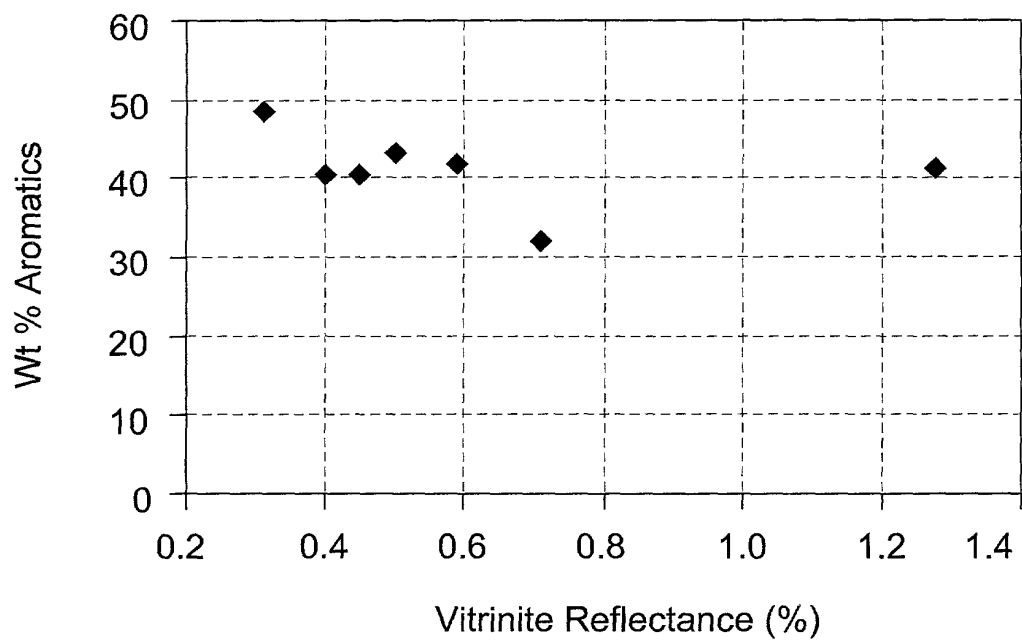


FIG. 81

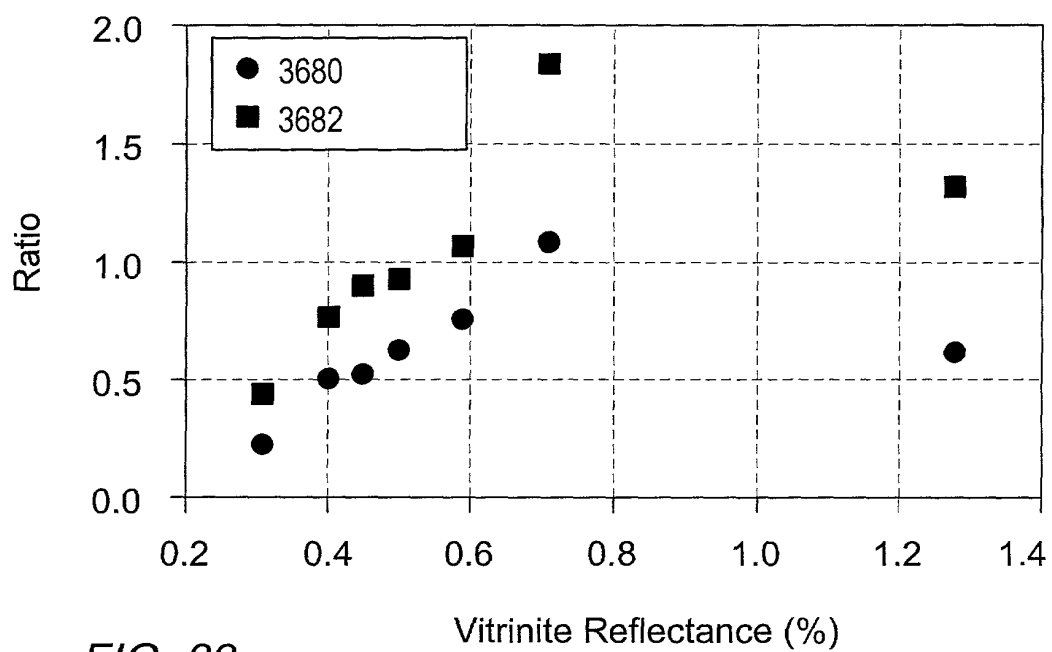


FIG. 82

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
FORT COLLINS, COLORADO 80521

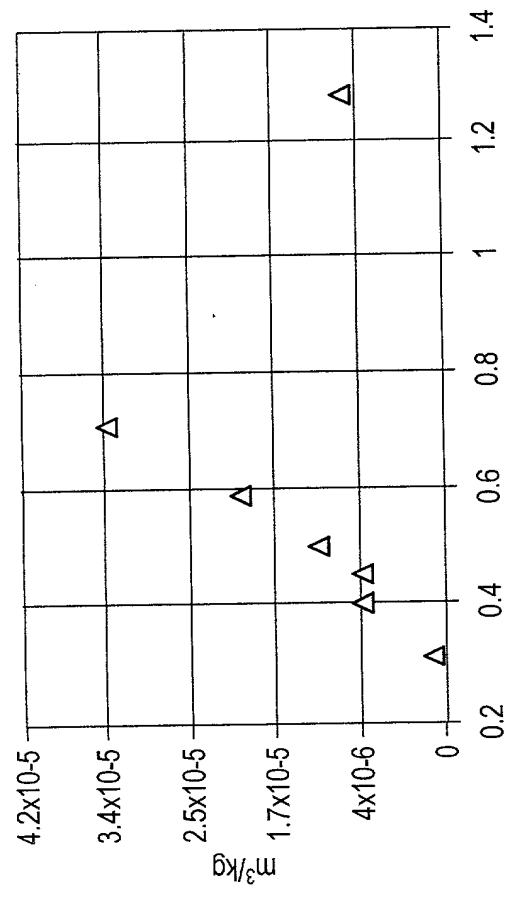


FIG. 83

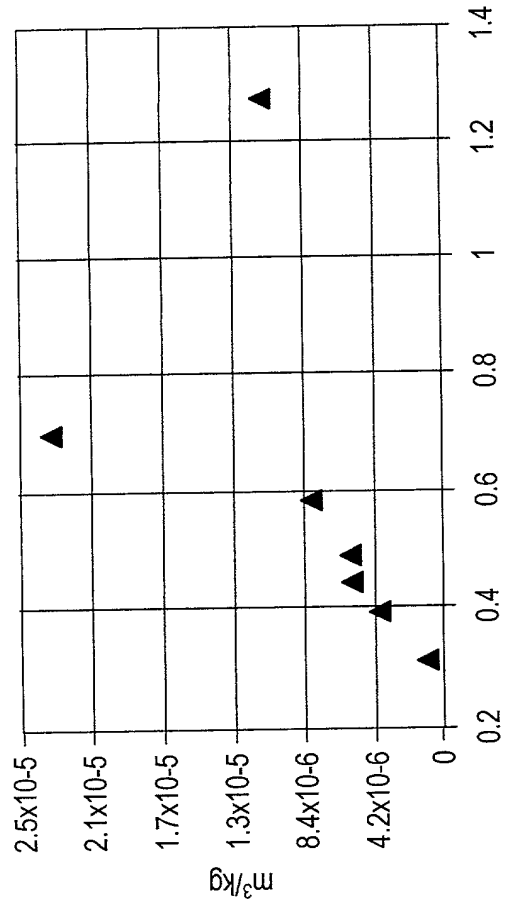


FIG. 84

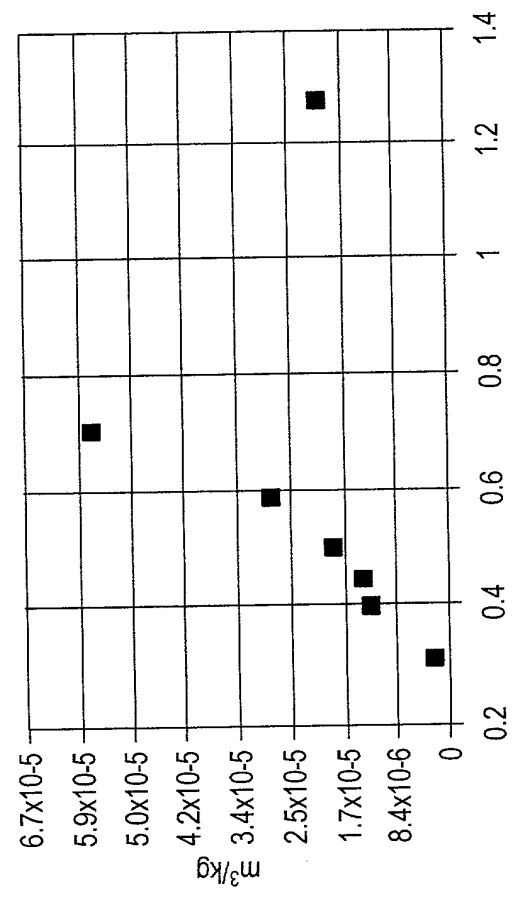


FIG. 85

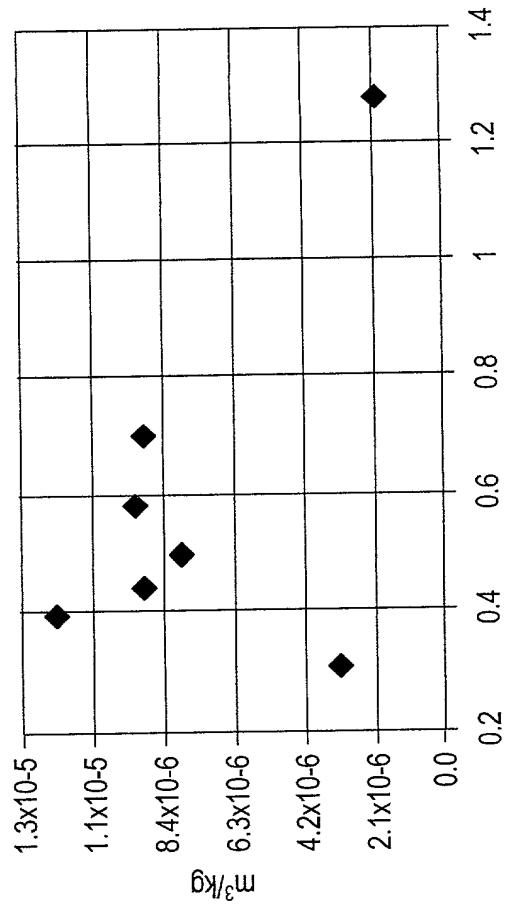


FIG. 86

Figure 87 is a scatter plot showing the relationship between API Gravity (°) and Vitrinite Reflectance (%). The Y-axis represents API Gravity (°) ranging from 20 to 38. The X-axis represents Vitrinite Reflectance (%) ranging from 0.2 to 1.4. The data points are as follows:

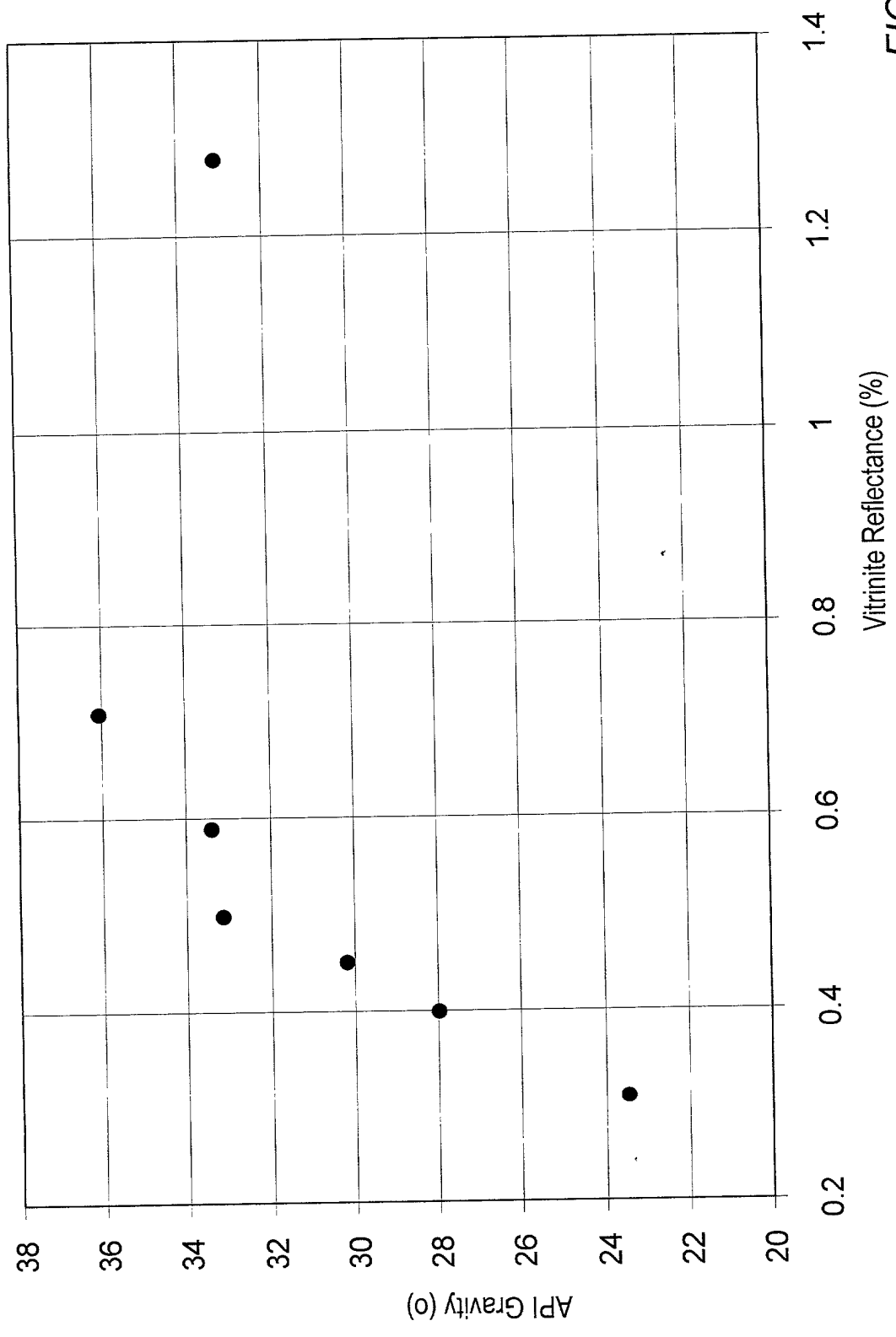
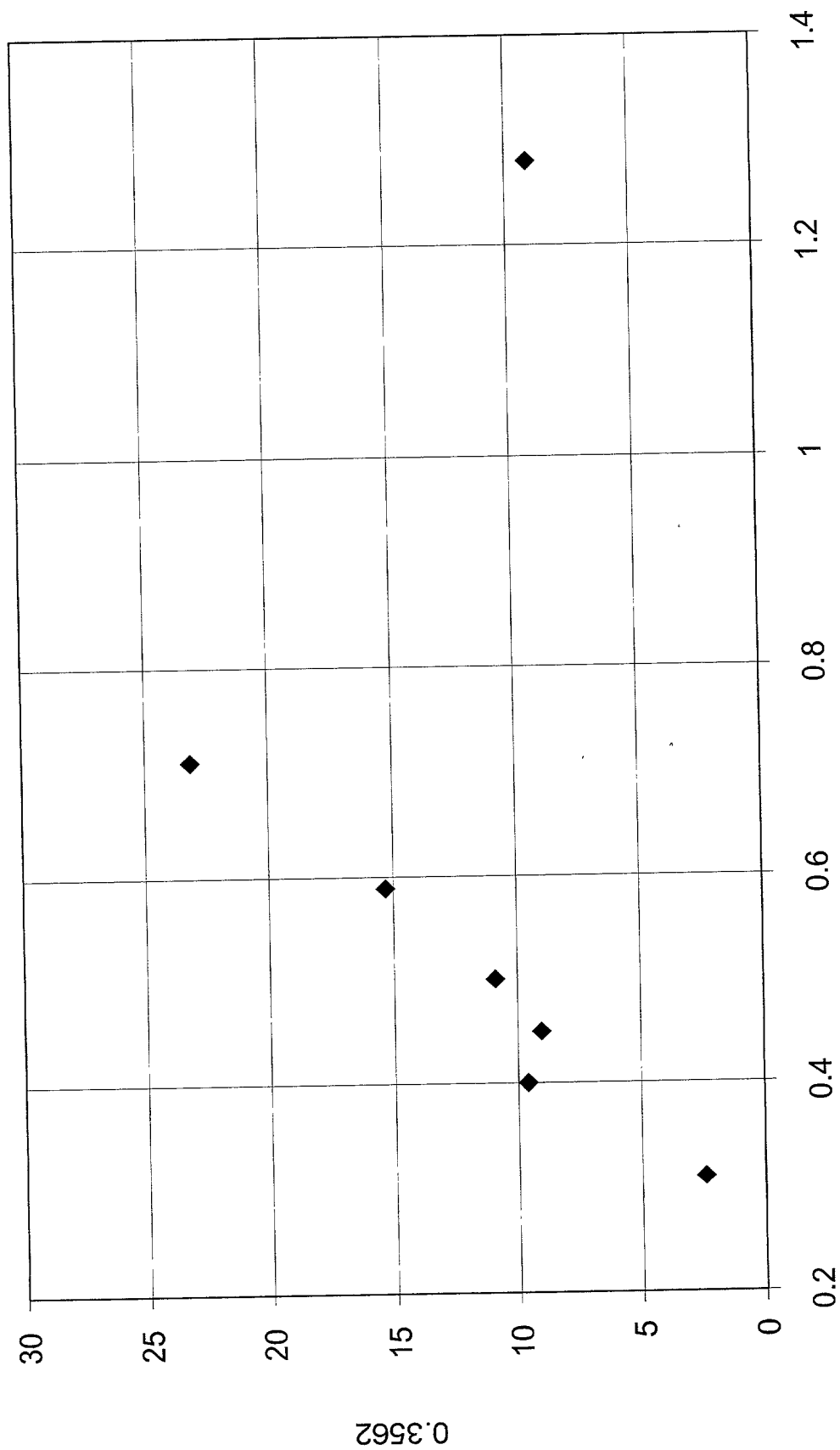


FIG. 87



Vitrinite Reflectance (%)

FIG. 88

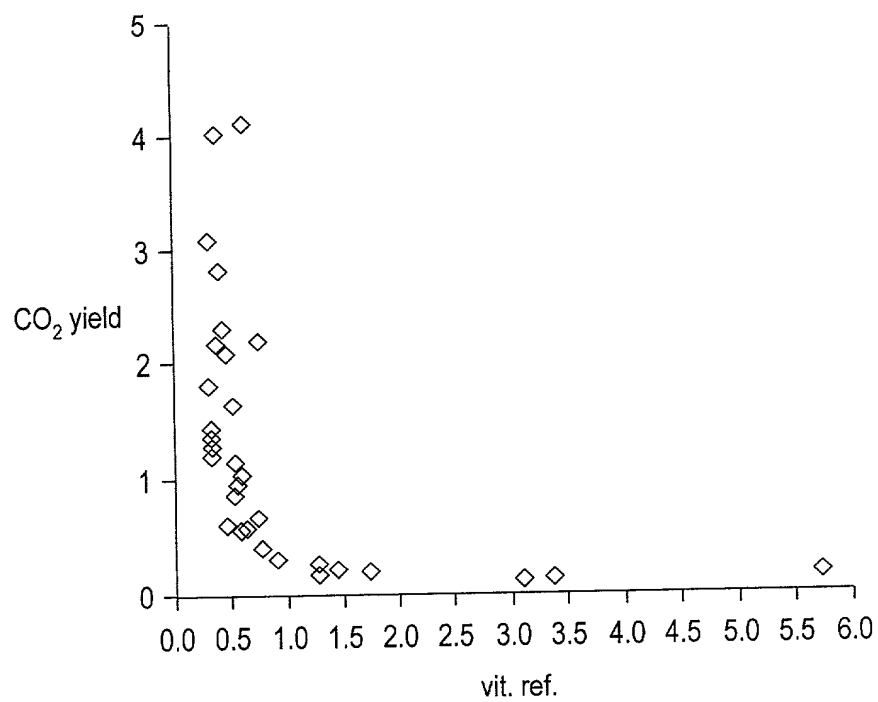


FIG. 89

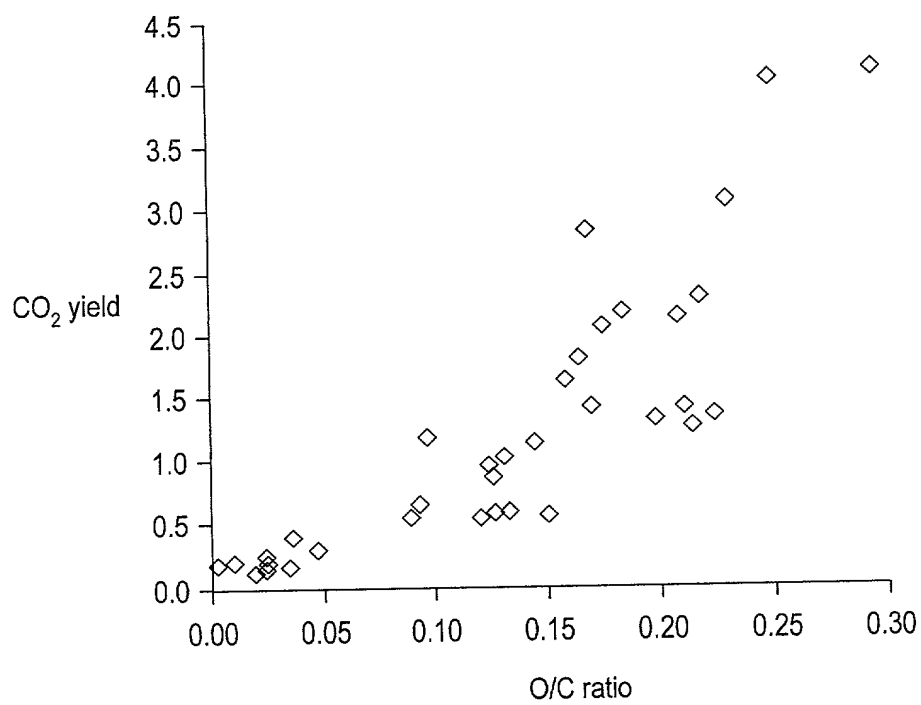


FIG. 90

FIG. 91 is a schematic diagram of a system for processing a material. The system includes a material source 3700, a processing chamber 3702, a heating element 3704, a gas inlet 3706, a gas outlet 3708, a gas flow controller 3710, a gas flow meter 3712, a gas flow sensor 3714, and a gas flow actuator 3716. The material source 3700 is connected to the processing chamber 3702. The processing chamber 3702 is connected to the gas inlet 3706. The gas inlet 3706 is connected to the gas flow controller 3710. The gas flow controller 3710 is connected to the gas flow meter 3712. The gas flow meter 3712 is connected to the gas flow sensor 3714. The gas flow sensor 3714 is connected to the gas flow actuator 3716. The gas flow actuator 3716 is connected to the gas inlet 3706. The heating element 3704 is connected to the processing chamber 3702. The gas outlet 3708 is connected to the processing chamber 3702. The gas outlet 3708 is connected to the gas flow controller 3710. The gas flow controller 3710 is connected to the gas flow meter 3712. The gas flow meter 3712 is connected to the gas flow sensor 3714. The gas flow sensor 3714 is connected to the gas flow actuator 3716. The gas flow actuator 3716 is connected to the gas inlet 3706.

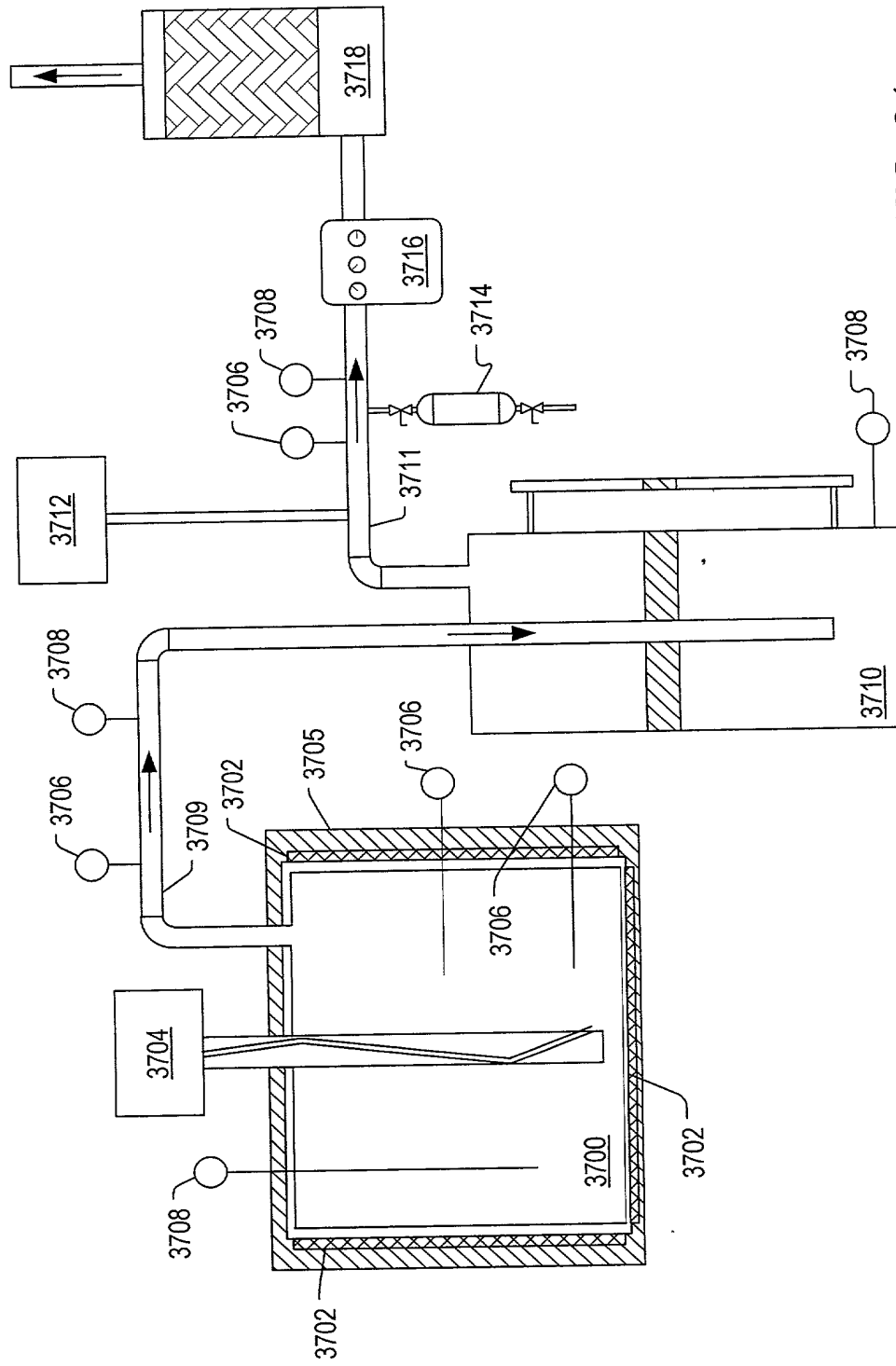


FIG. 91

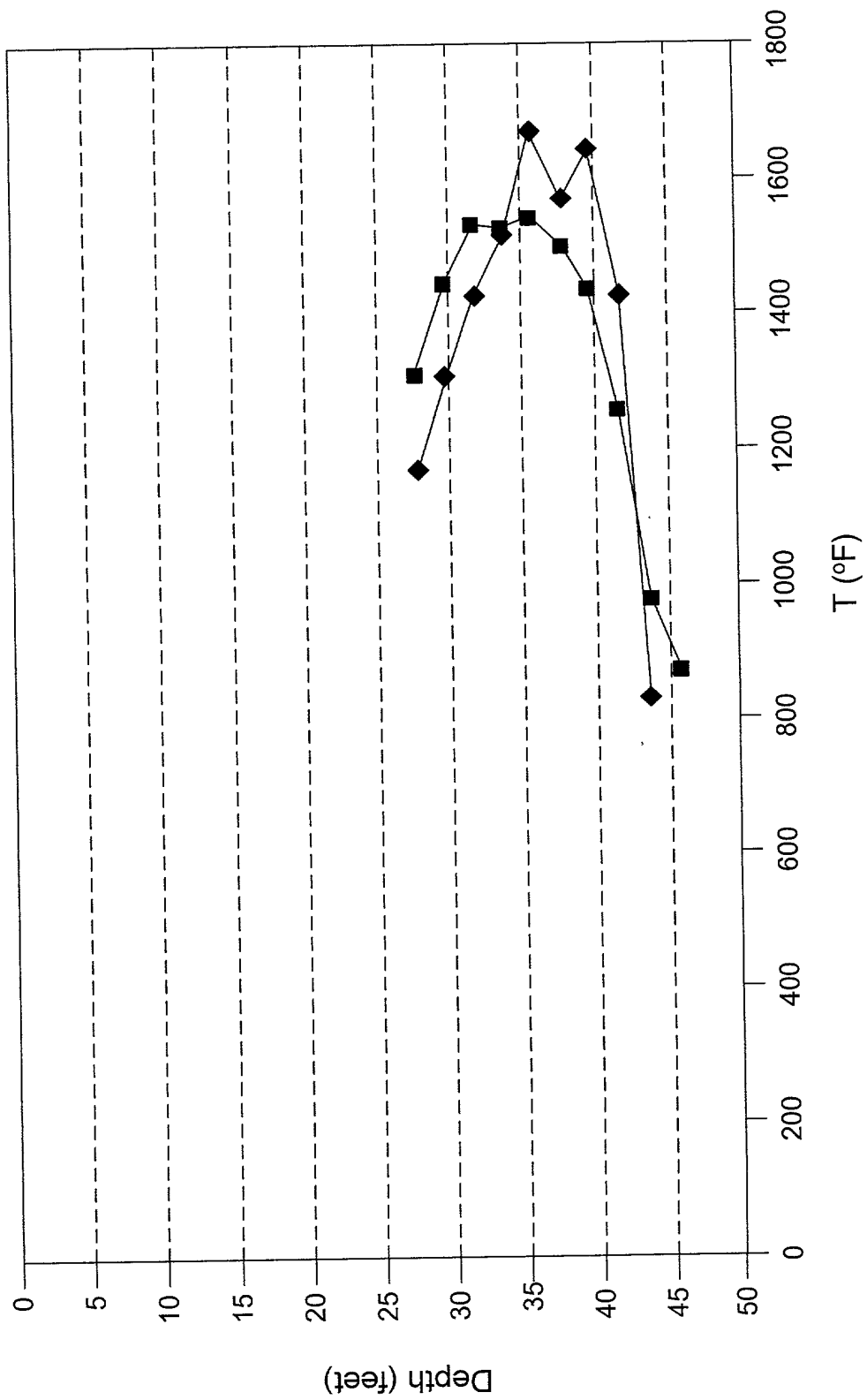


FIG. 92

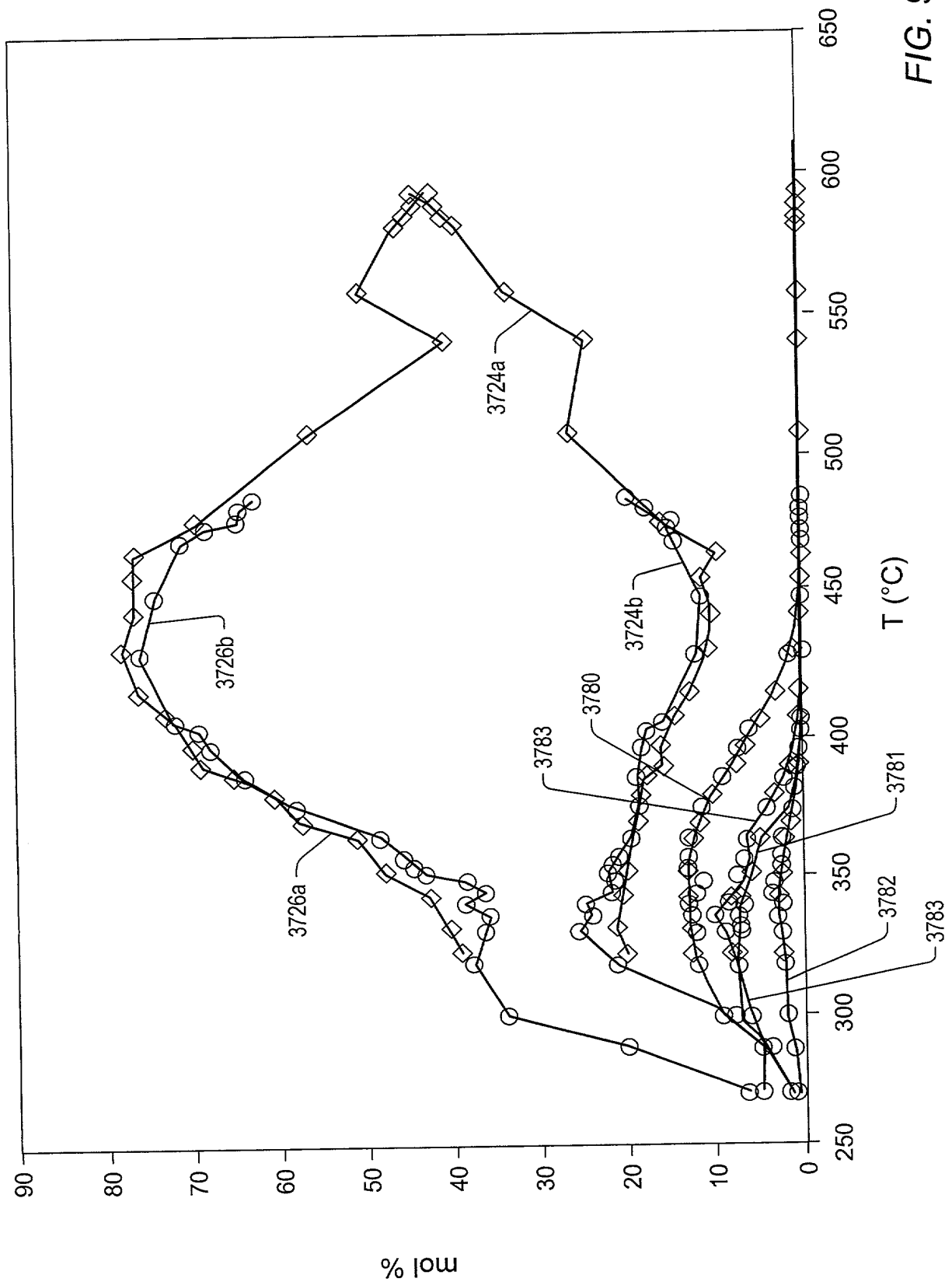


FIG. 93

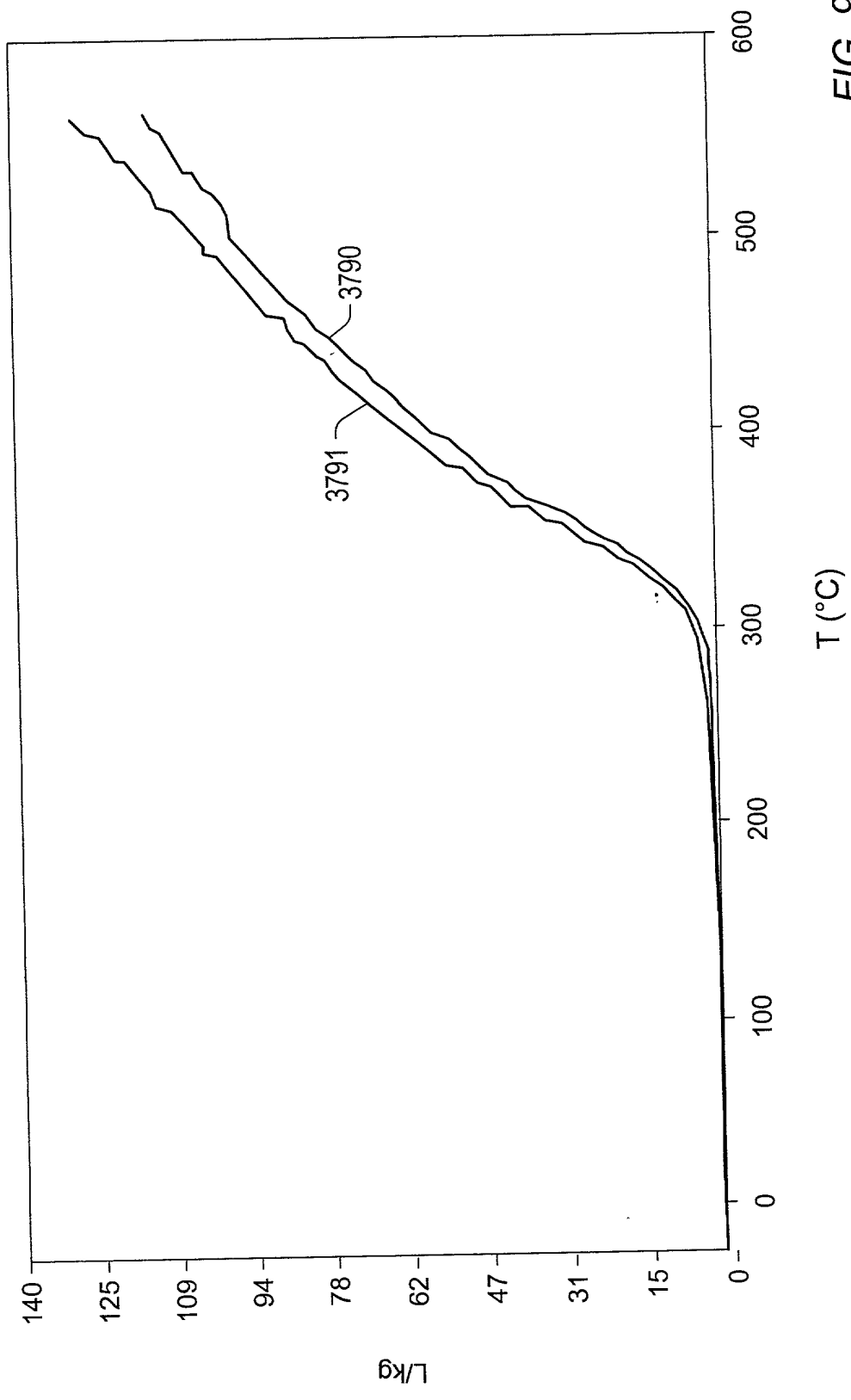


FIG. 94

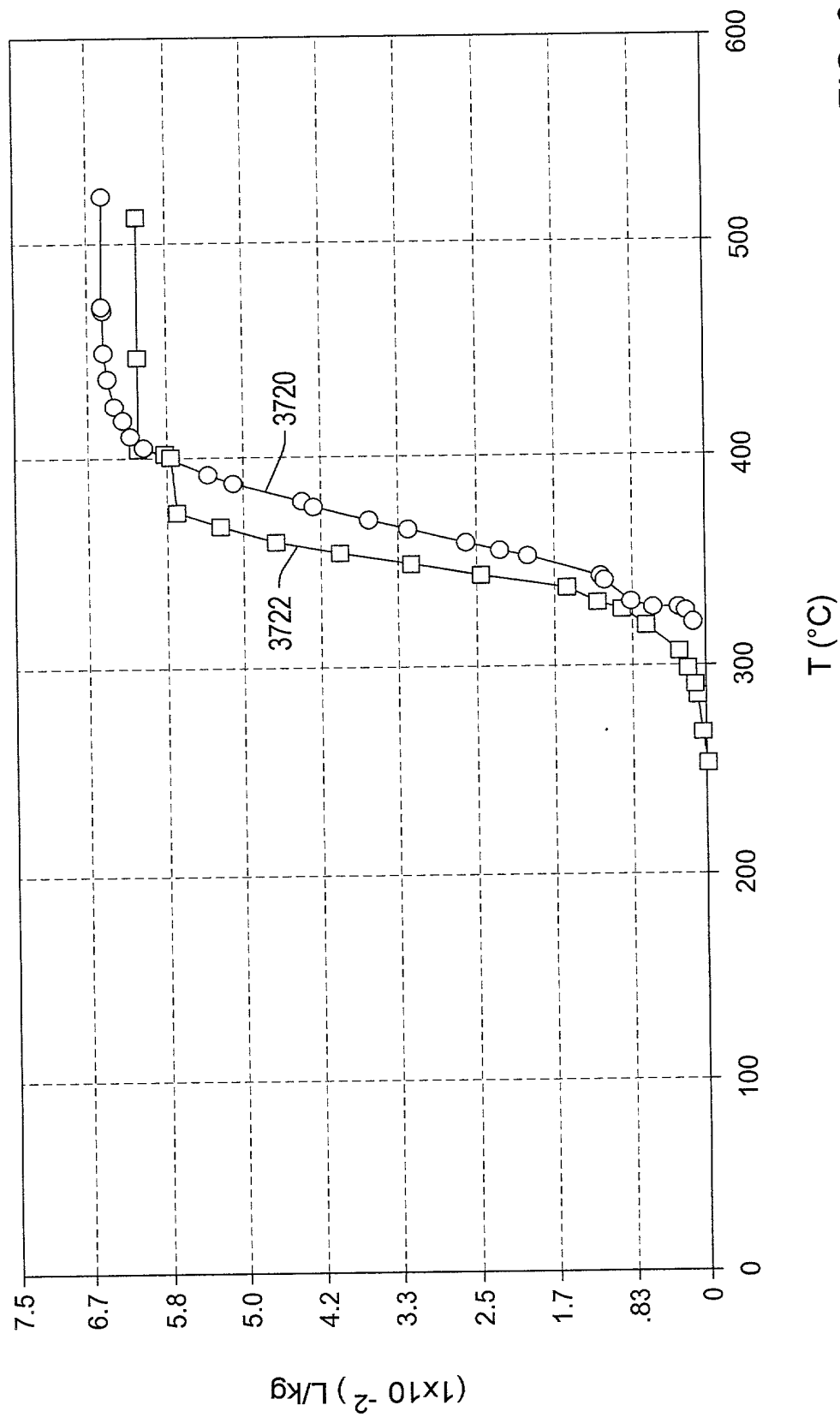


FIG. 95

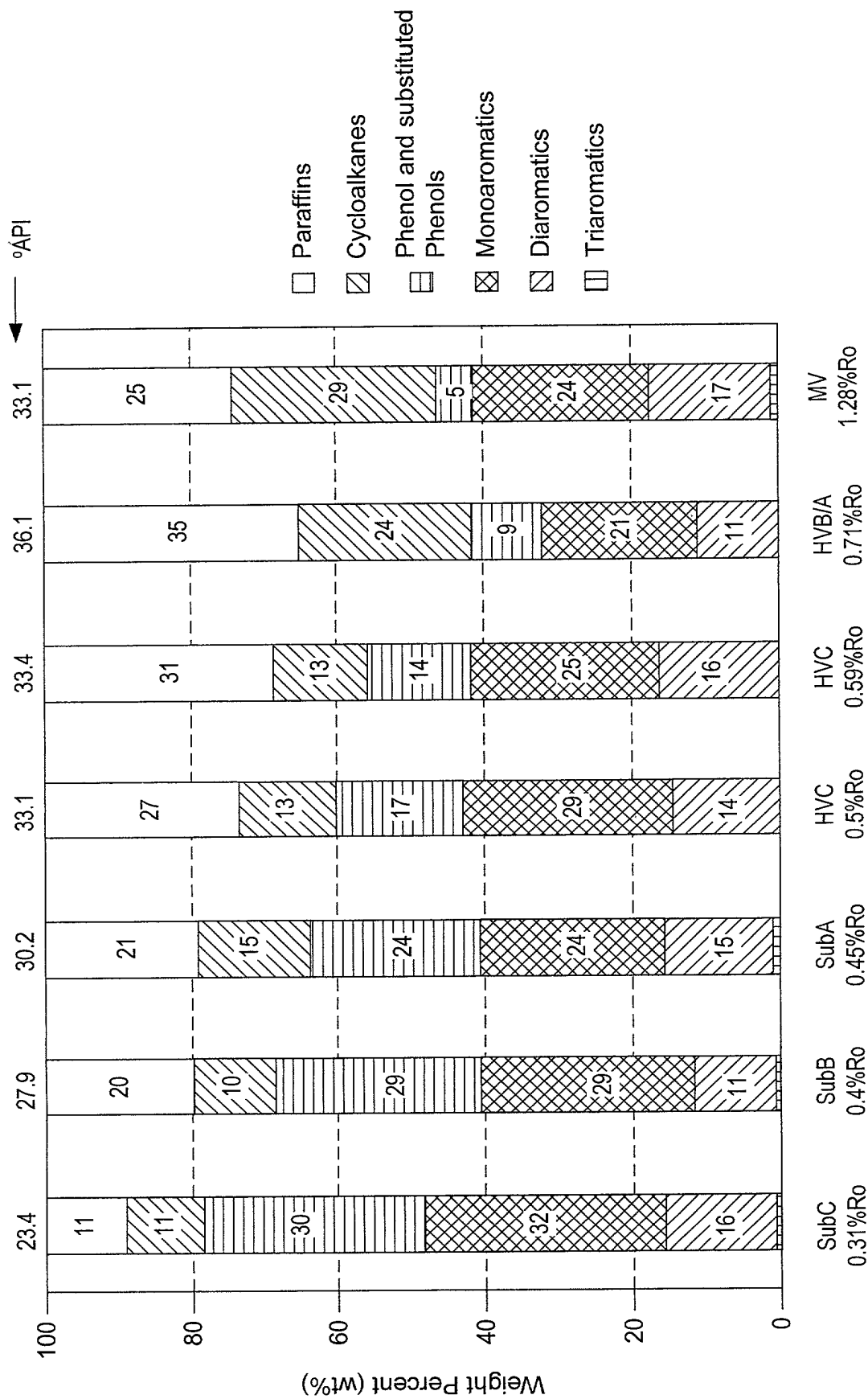


FIG. 96

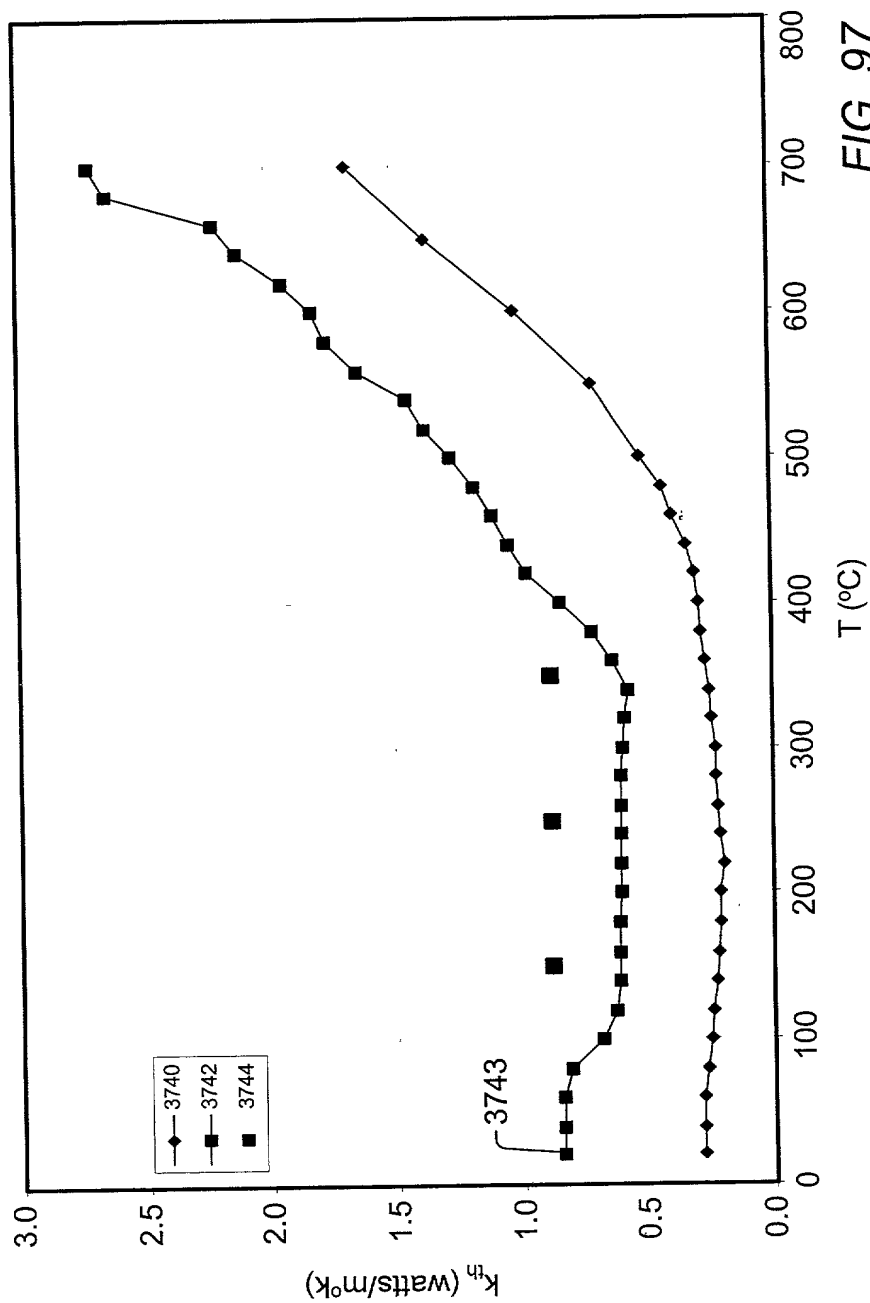


FIG. 97

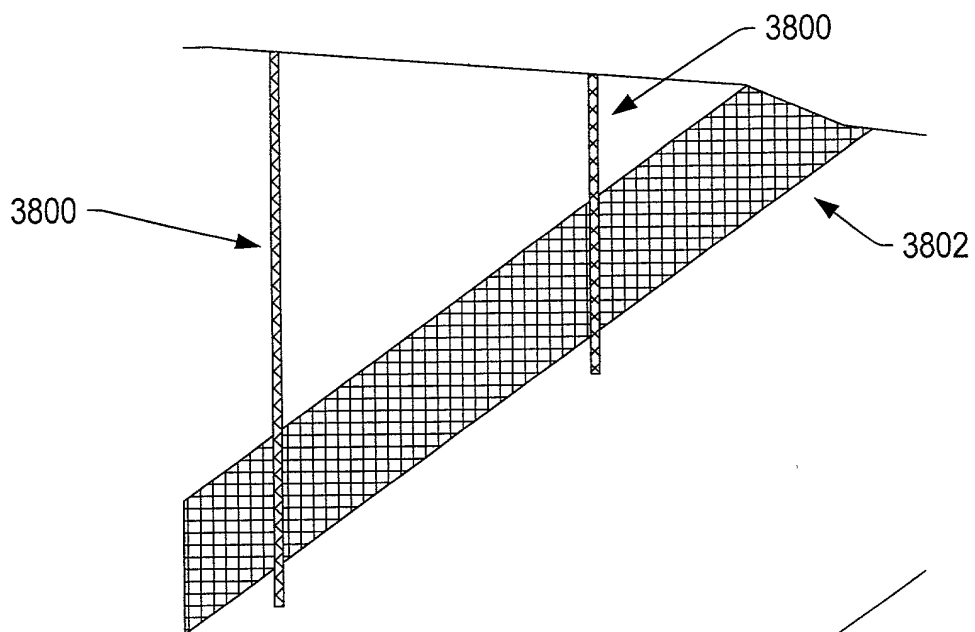


FIG. 98

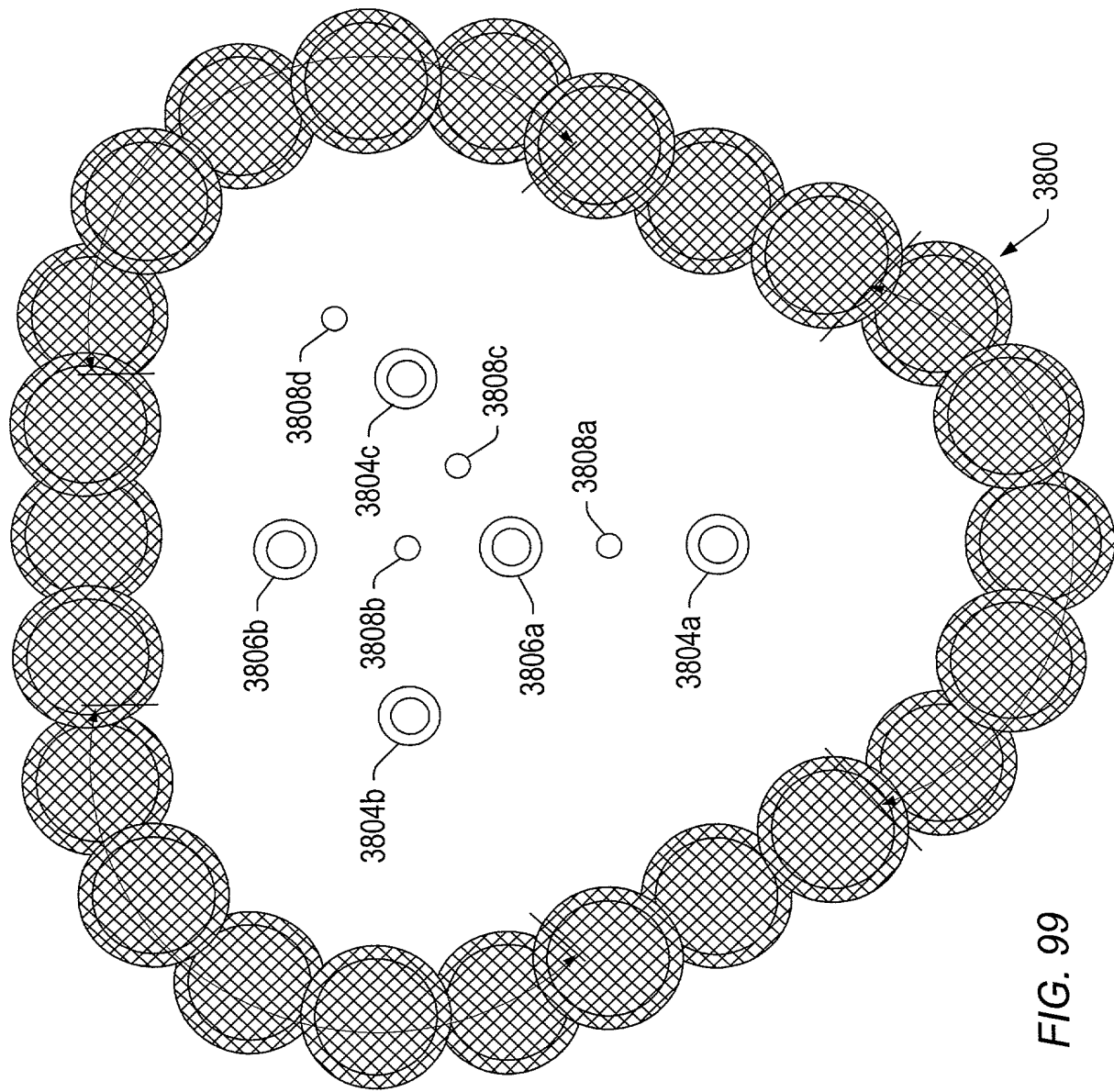
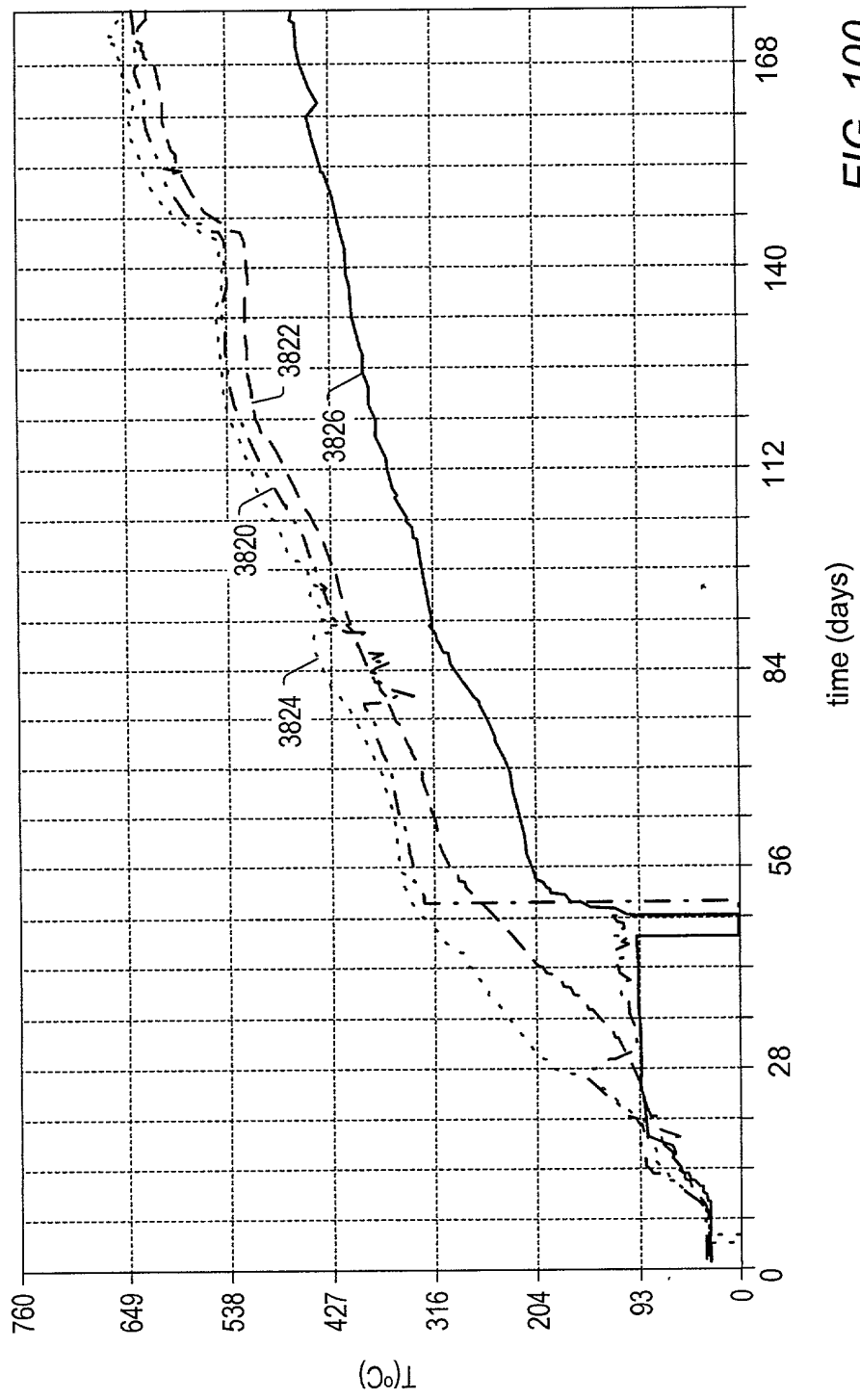


FIG. 99

FIG. 100



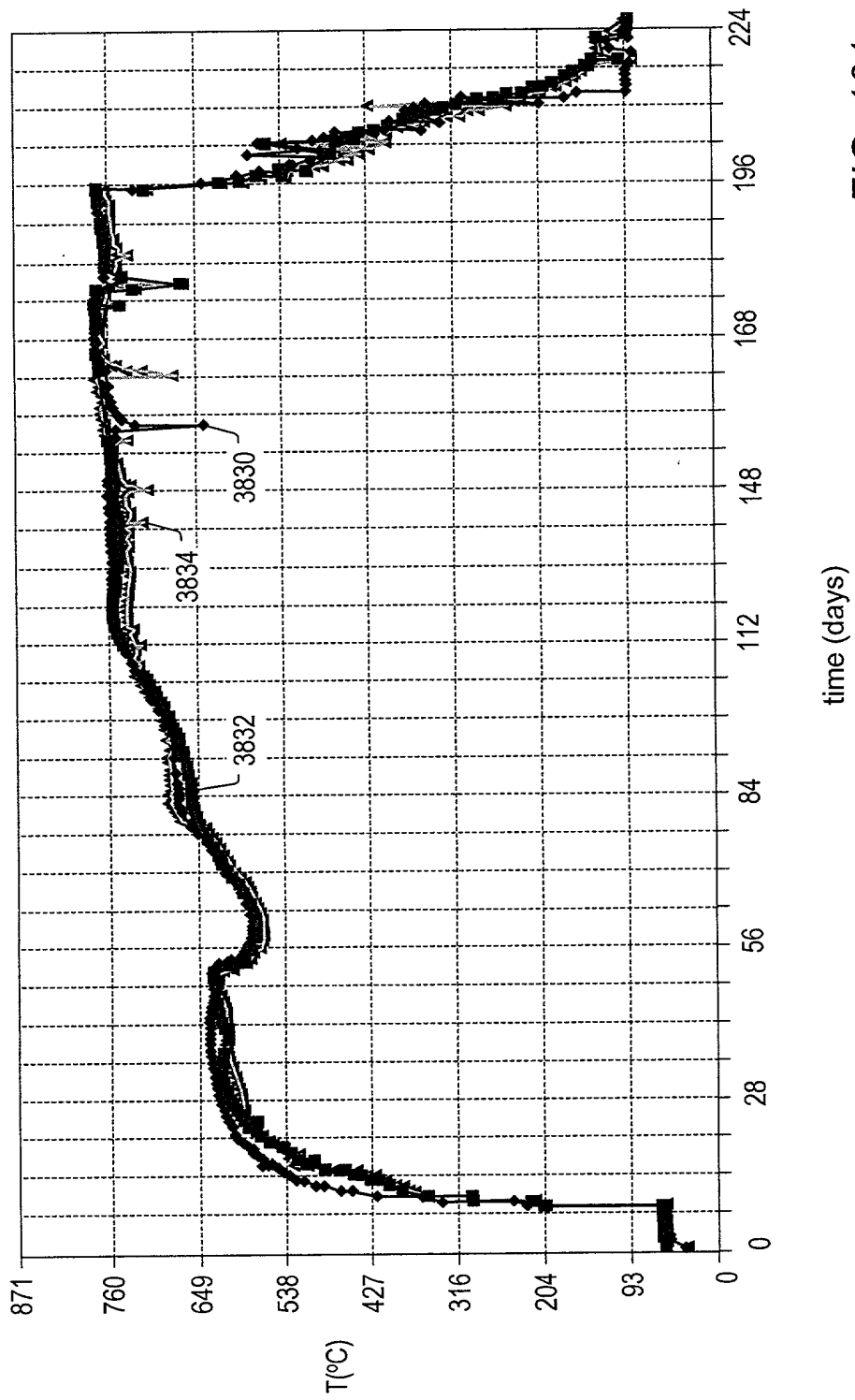


FIG. 101

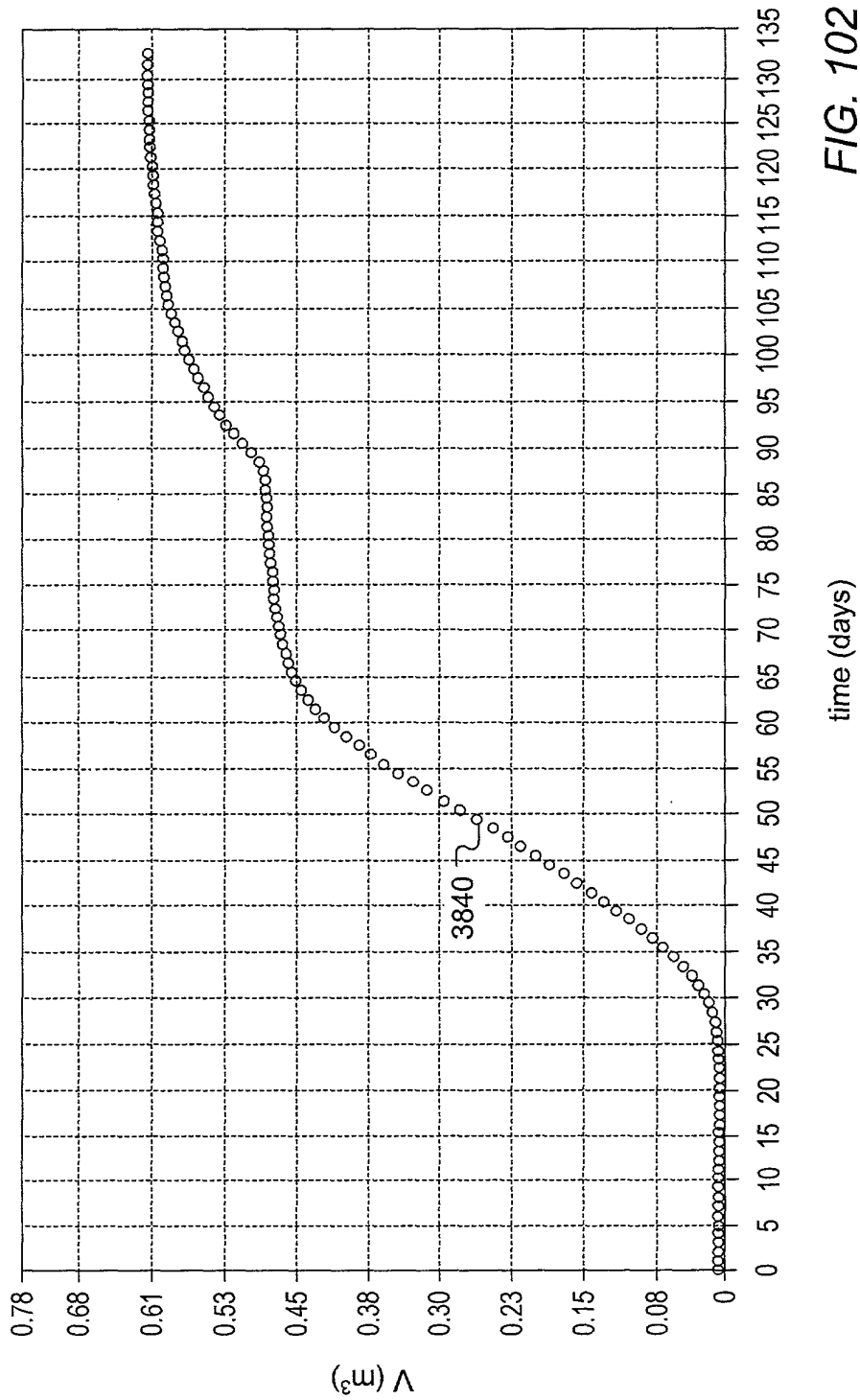
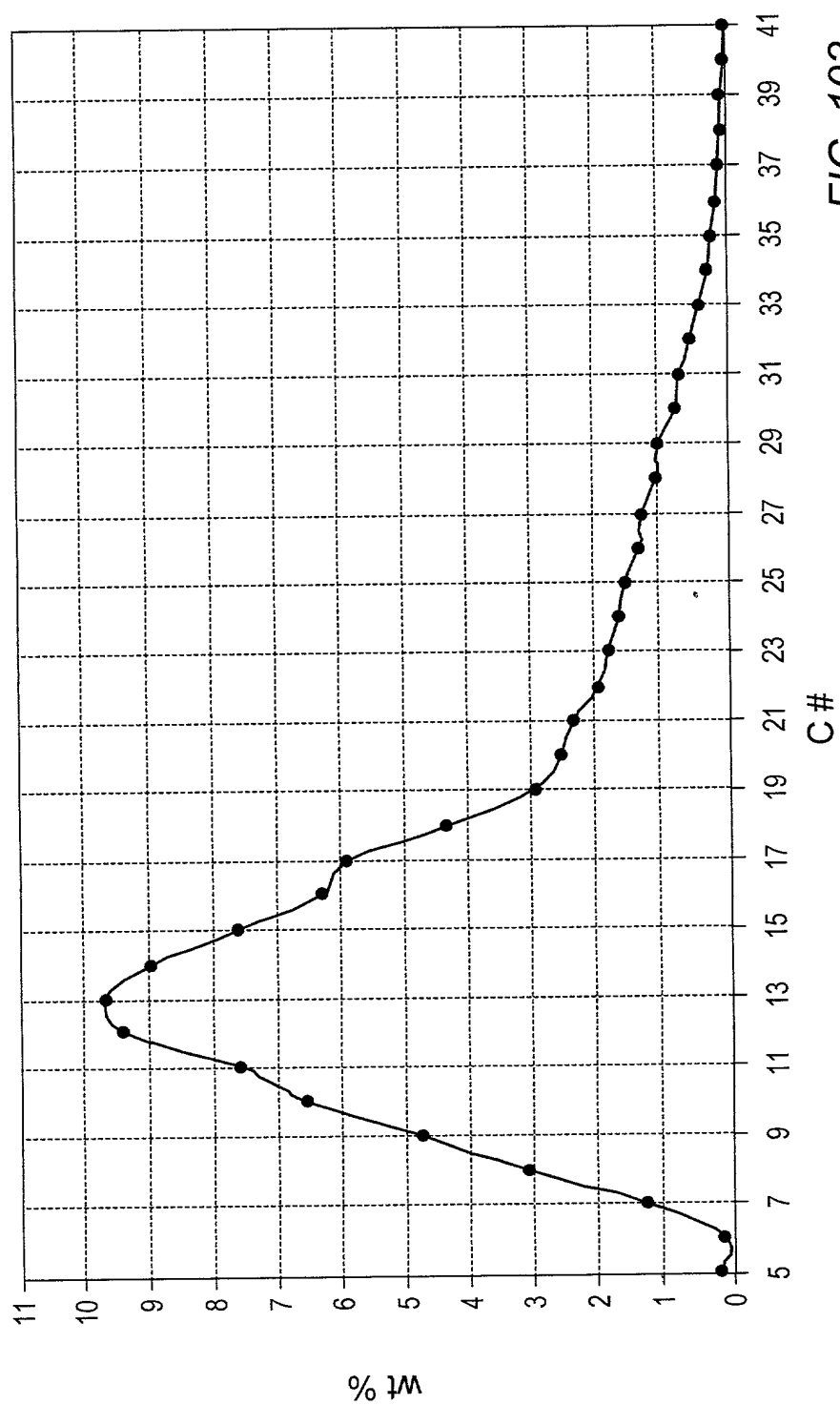


FIG. 102

Species	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100	2101	2102	2103	2104	2105	2106	2107	2108	2109	2110	2111	2112	2113	2114	2115	2116	2117	2118	2119	2120	2121	2122	2123	2124	2125	2126	2127	2128	2129	2130	2131	2132	2133	2134	2135	2136	2137	2138	2139	2140	2141	2142	2143	2144	2145	2146	2147	2148	2149	2150	2151	2152	2153	2154	2155	2156	2157	2158	2159	2160	2161	2162	2163	2164	2165	2166	2167	2168	2169	2170	2171	2172	2173	2174	2175	2176	2177	2178	2179	2180	2181	2182	2183	2184	2185	2186	2187	2188	2189	2190	2191	2192	2193	2194	2195	2196	2197	2198	2199	2200	2201	2202	2203	2204	2205	2206	2207	2208	2209	2210	2211	2212	2213	2214	2215	2216	2217	2218	2219	2220	2221	2222	2223	2224	2225	2226	2227	2228	2229	2230	2231	2232	2233	2234	2235	2236	2237	2238	2239	2240	2241	2242	2243	2244	2245	2246	2247	2248	2249	2250	2251	2252	2253	2254	2255	2256	2257	2258	2259	2260	2261	2262	2263	2264	2265	2266	2267	2268	2269	2270	2271	2272	2273	2274	2275	2276	2277	2278	2279	2280	2281	2282	2283	2284	2285	2286	2287	2288	2289	2290	2291	2292	2293	2294	2295	2296	2297	2298	2299	2300	2301	2302	2303	2304	2305	2306	2307	2308	2309	2310	2311	2312	2313	2314	2315	2316	2317	2318	2319	2320	2321	2322	2323	2324	2325	2326	2327	2328	2329	2330	2331	2332	2333	2334	2335	2336	2337	2338	2339	2340	2341	2342	2343	2344	2345	2346	2347	2348	2349	2350	2351	2352	2353	2354	2355	2356	2357	2358	2359	2360	2361	2362	2363	2364	2365</
---------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	--------



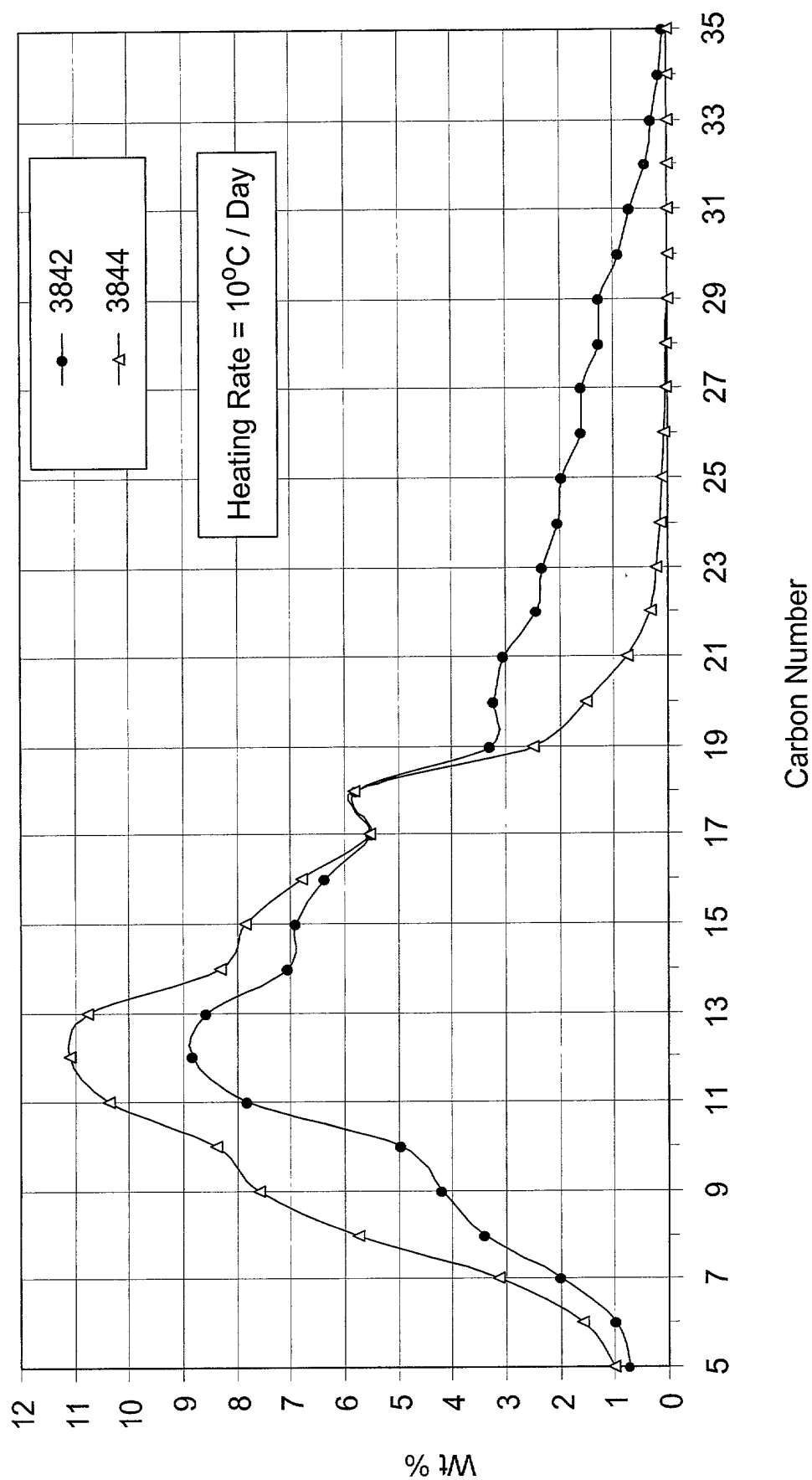


FIG. 104

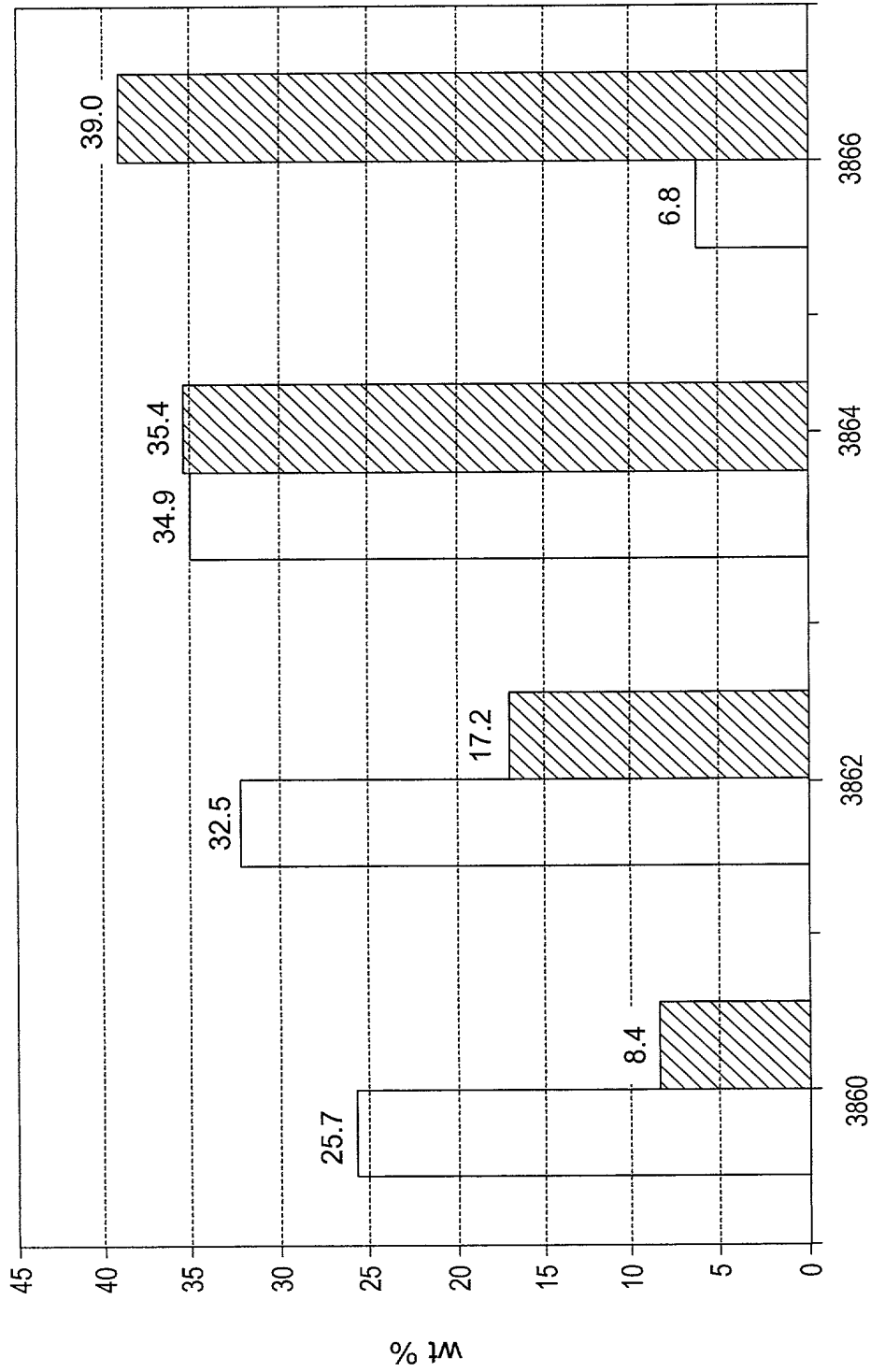


FIG. 105

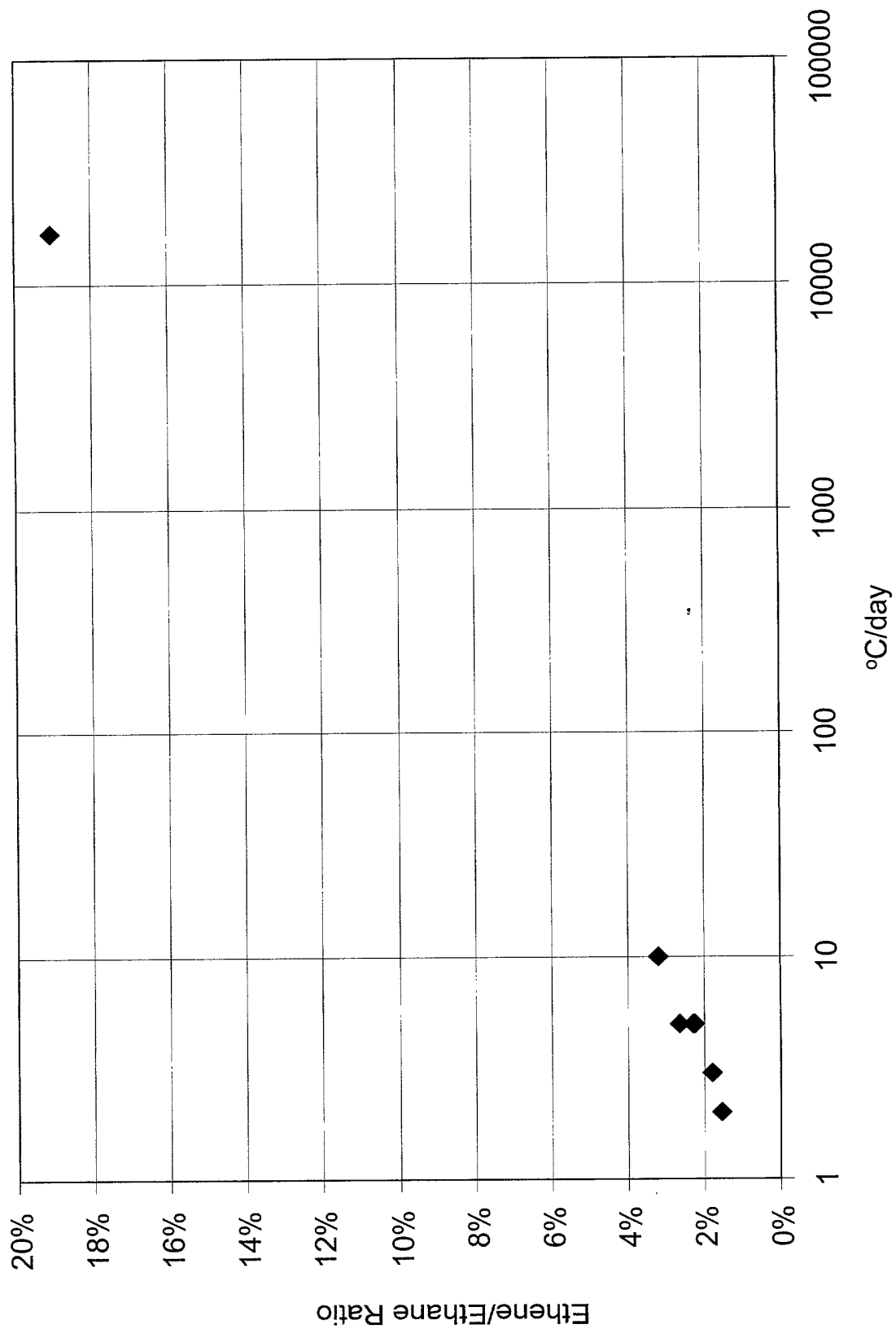


FIG. 106

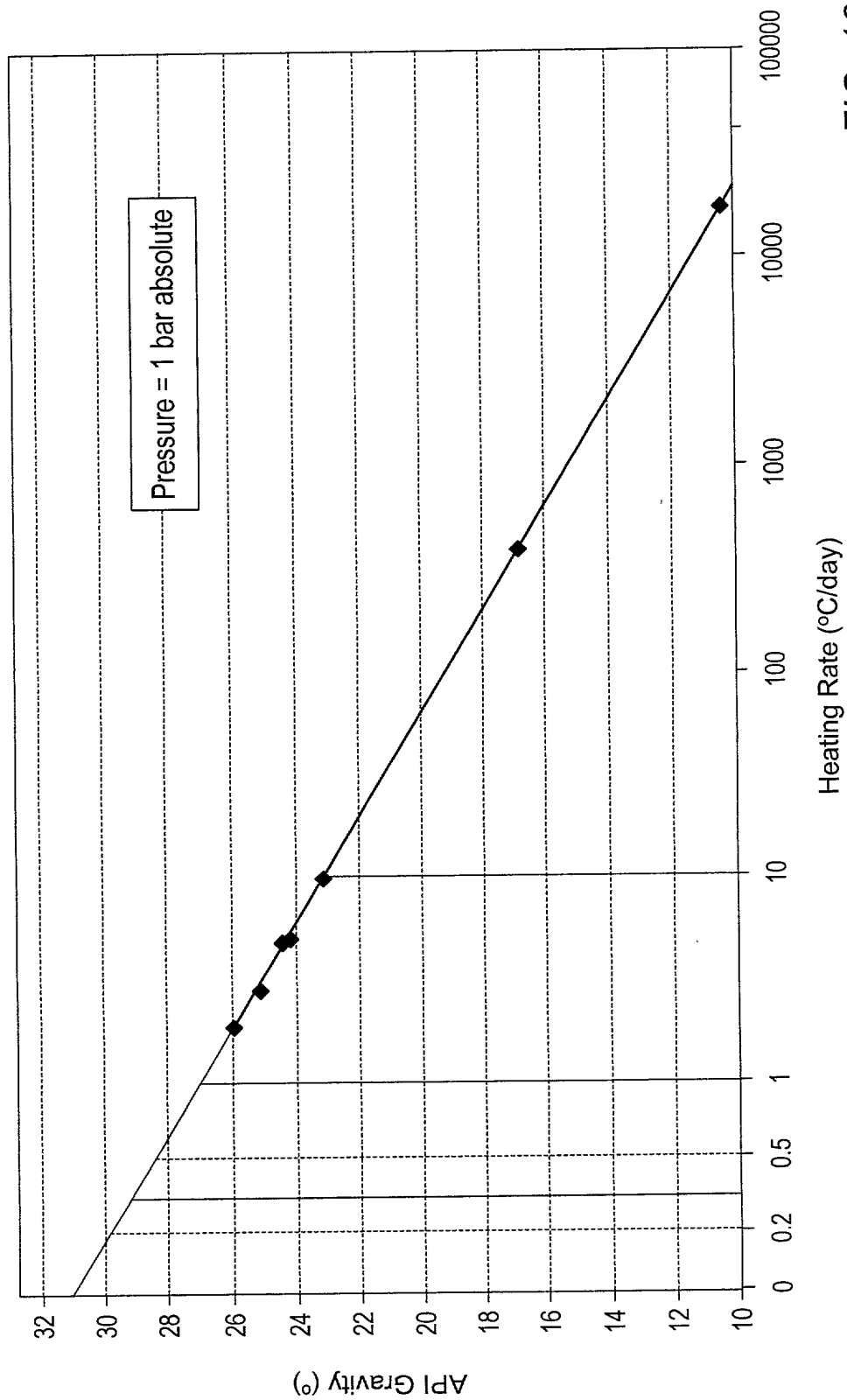


FIG. 107

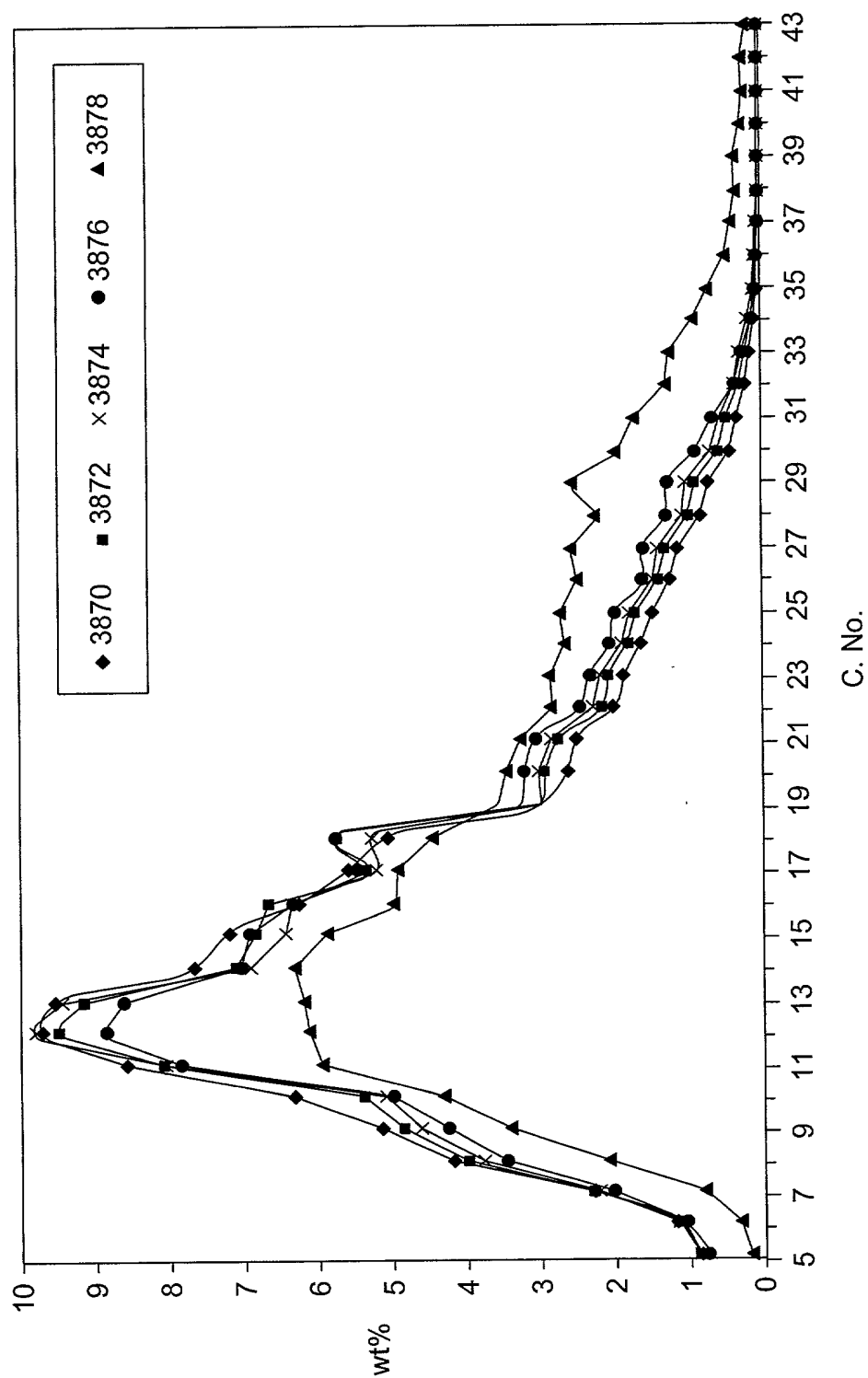


FIG. 108

Time	1200	1215	1230	1245	1300	1315	1330	1345	1400	1415	1430	1445	1500	1515	1530	1545	1600	1615	1630	1645	1700	1715	1730	1745	1800	1815	1830	1845	1900	1915	1930	1945	2000	2015	2030	2045	2100	2115	2130	2145	2200	2215	2230	2245	2300	2315	2330	2345	2400	2415	2430	2445	2500	2515	2530	2545	2600	2615	2630	2645	2700	2715	2730	2745	2800	2815	2830	2845	2900	2915	2930	2945	3000	3015	3030	3045	3100	3115	3130	3145	3200	3215	3230	3245	3300	3315	3330	3345	3400	3415	3430	3445	3500	3515	3530	3545	3600	3615	3630	3645	3700	3715	3730	3745	3800	3815	3830	3845	3900	3915	3930	3945	4000	4015	4030	4045	4100	4115	4130	4145	4200	4215	4230	4245	4300	4315	4330	4345	4400	4415	4430	4445	4500	4515	4530	4545	4600	4615	4630	4645	4700	4715	4730	4745	4800	4815	4830	4845	4900	4915	4930	4945	5000	5015	5030	5045	5100	5115	5130	5145	5200	5215	5230	5245	5300	5315	5330	5345	5400	5415	5430	5445	5500	5515	5530	5545	5600	5615	5630	5645	5700	5715	5730	5745	5800	5815	5830	5845	5900	5915	5930	5945	6000	6015	6030	6045	6100	6115	6130	6145	6200	6215	6230	6245	6300	6315	6330	6345	6400	6415	6430	6445	6500	6515	6530	6545	6600	6615	6630	6645	6700	6715	6730	6745	6800	6815	6830	6845	6900	6915	6930	6945	7000	7015	7030	7045	7100	7115	7130	7145	7200	7215	7230	7245	7300	7315	7330	7345	7400	7415	7430	7445	7500	7515	7530	7545	7600	7615	7630	7645	7700	7715	7730	7745	7800	7815	7830	7845	7900	7915	7930	7945	8000	8015	8030	8045	8100	8115	8130	8145	8200	8215	8230	8245	8300	8315	8330	8345	8400	8415	8430	8445	8500	8515	8530	8545	8600	8615	8630	8645	8700	8715	8730	8745	8800	8815	8830	8845	8900	8915	8930	8945	9000	9015	9030	9045	9100	9115	9130	9145	9200	9215	9230	9245	9300	9315	9330	9345	9400	9415	9430	9445	9500	9515	9530	9545	9600	9615	9630	9645	9700	9715	9730	9745	9800	9815	9830	9845	9900	9915	9930	9945	10000
1200	1215	1230	1245	1300	1315	1330	1345	1400	1415	1430	1445	1500	1515	1530	1545	1600	1615	1630	1645	1700	1715	1730	1745	1800	1815	1830	1845	1900	1915	1930	1945	2000	2015	2030	2045	2100	2115	2130	2145	2200	2215	2230	2245	2300	2315	2330	2345	2400	2415	2430	2445	2500																																																																																																																																																																																																																																																																																																													

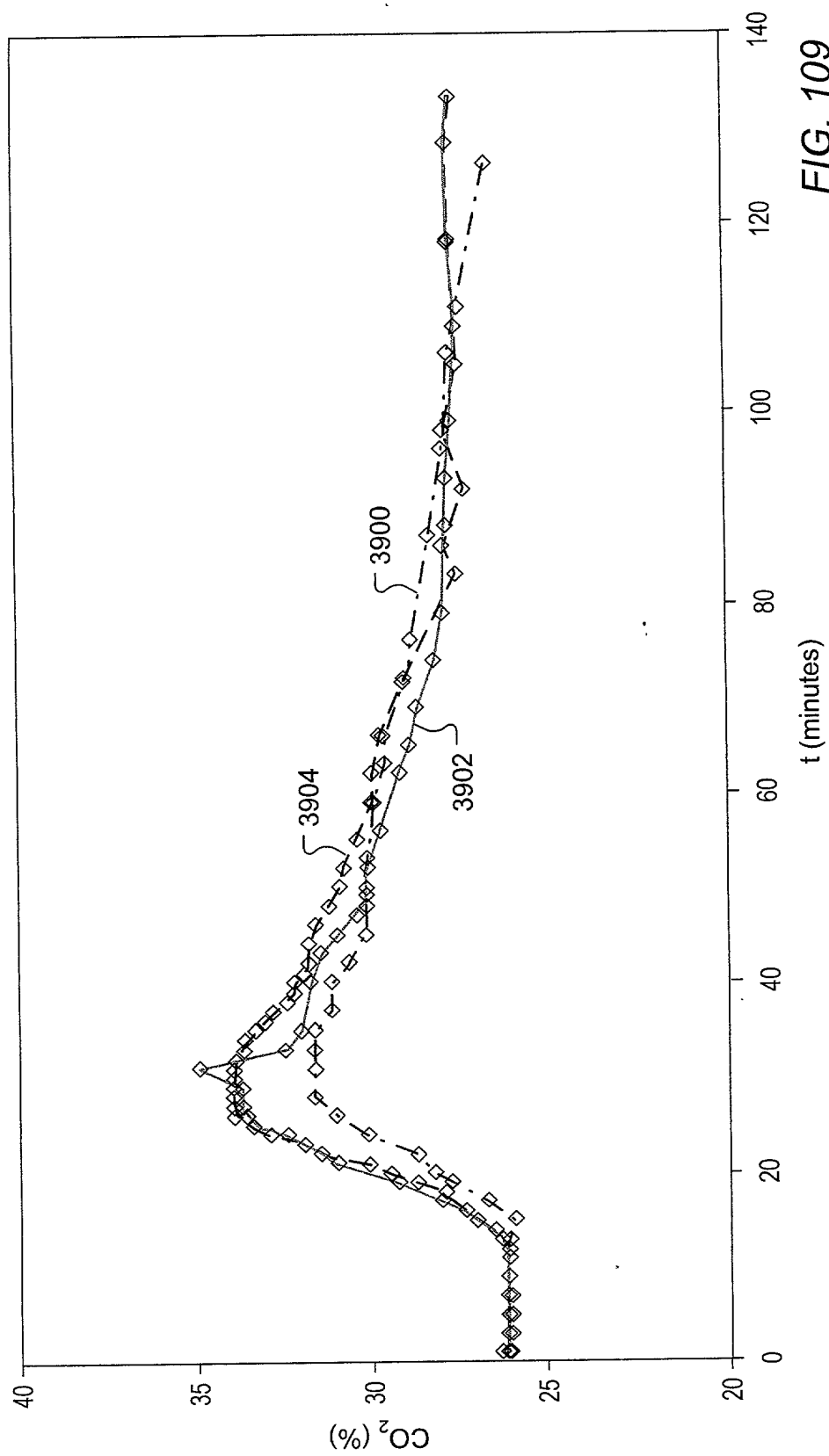


FIG. 110 is a graph showing the relationship between the cumulative energy input and the weight of the material processed.

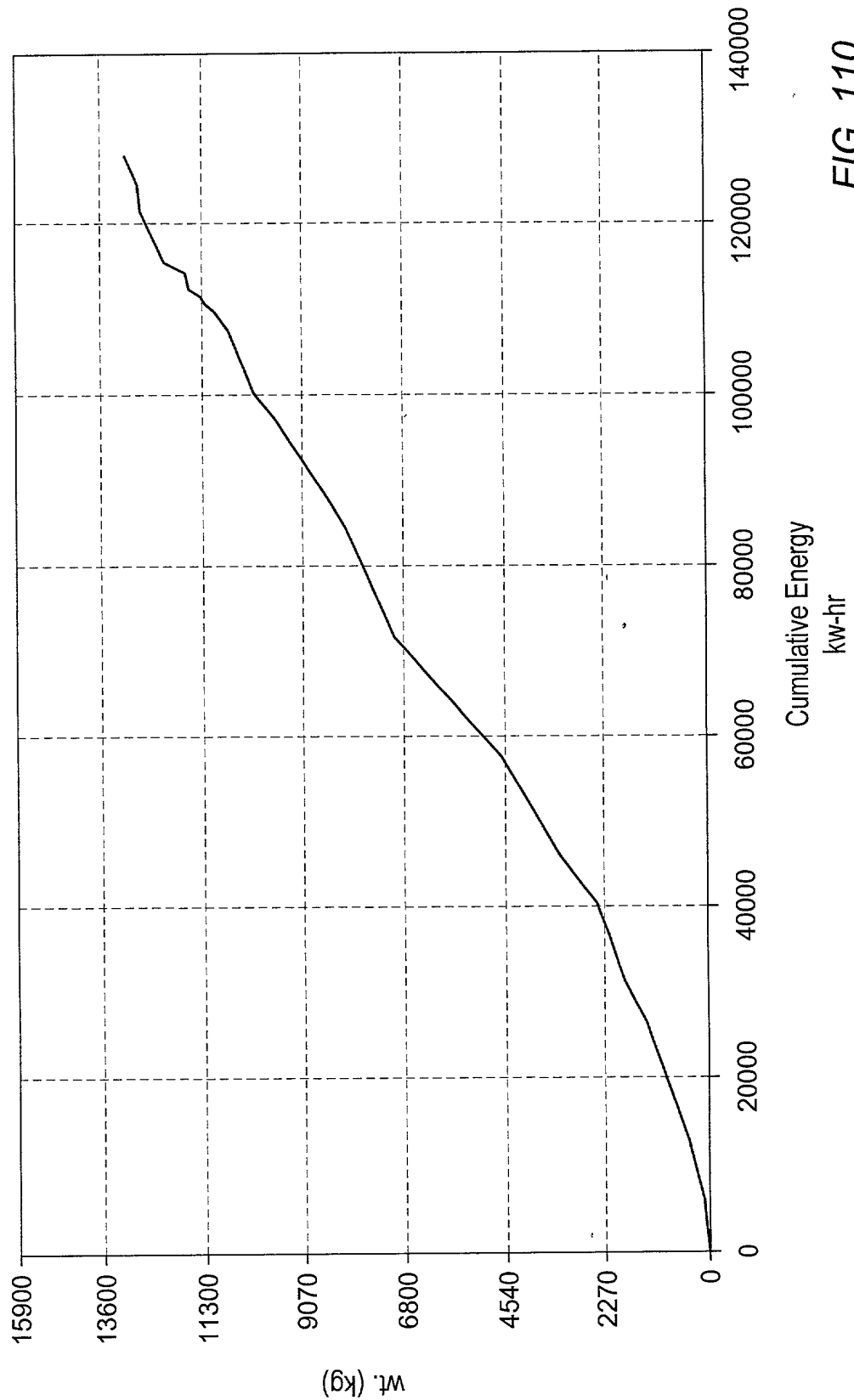


FIG. 110

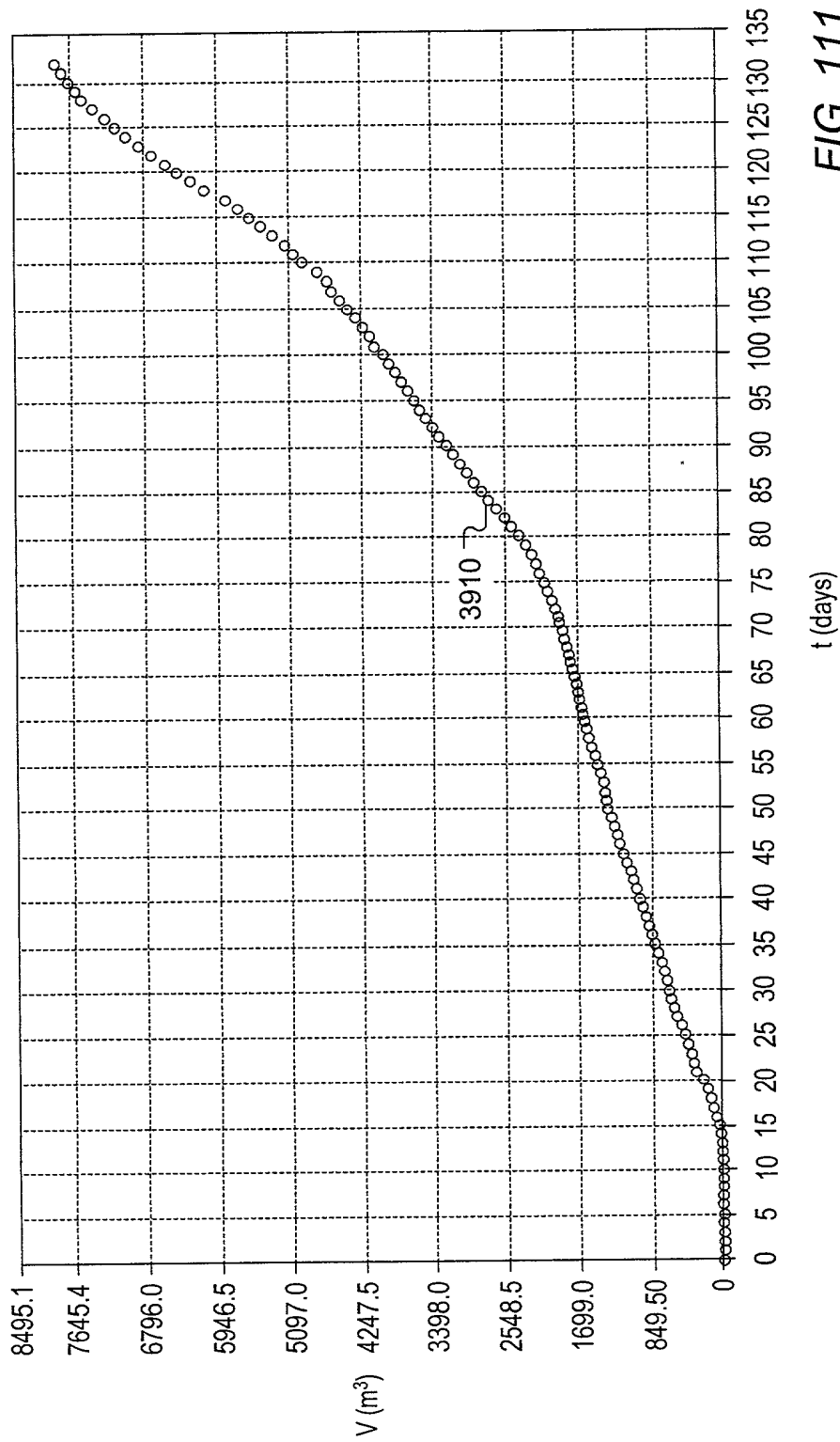


FIG. 111

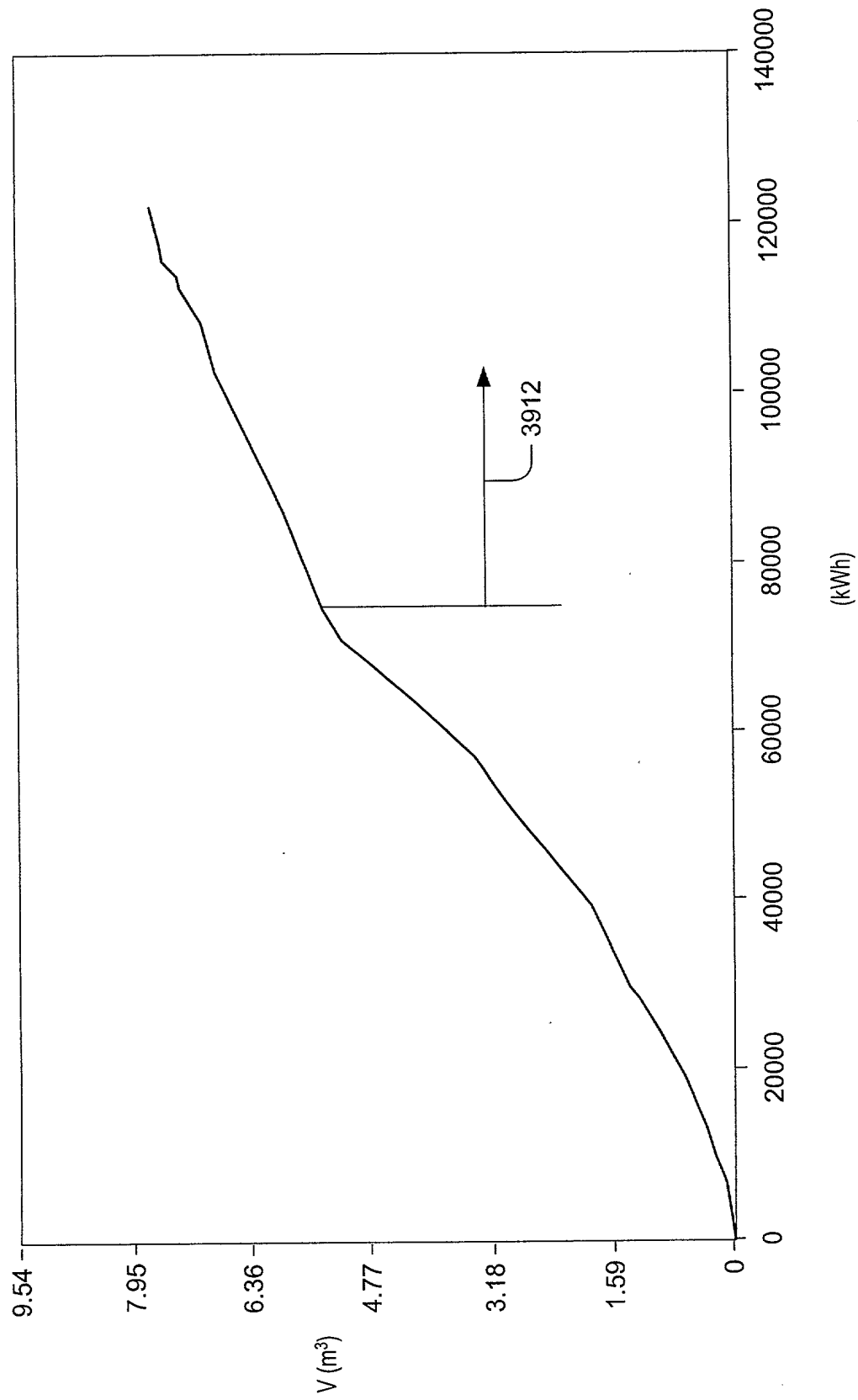


FIG. 112

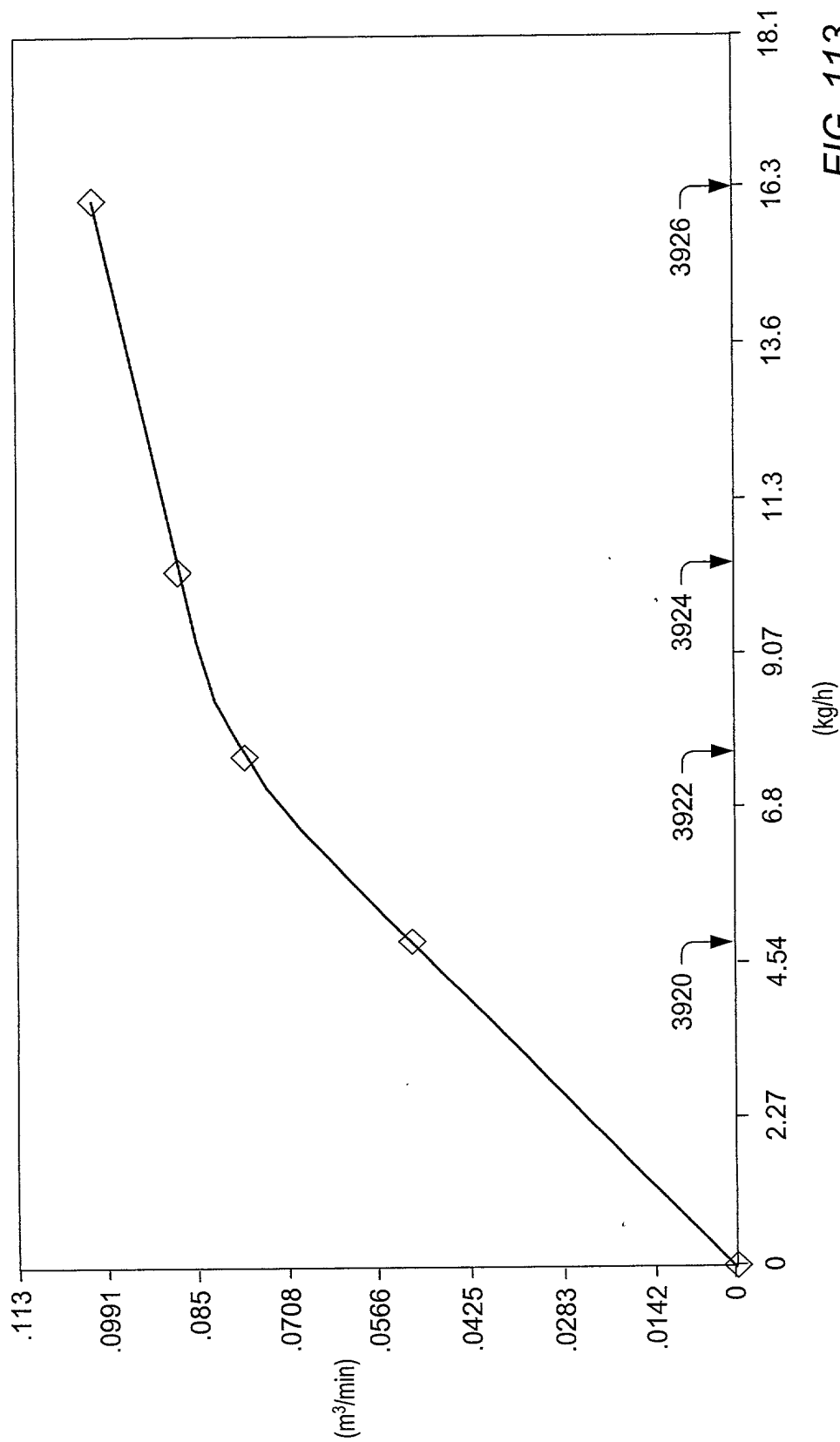


FIG. 113

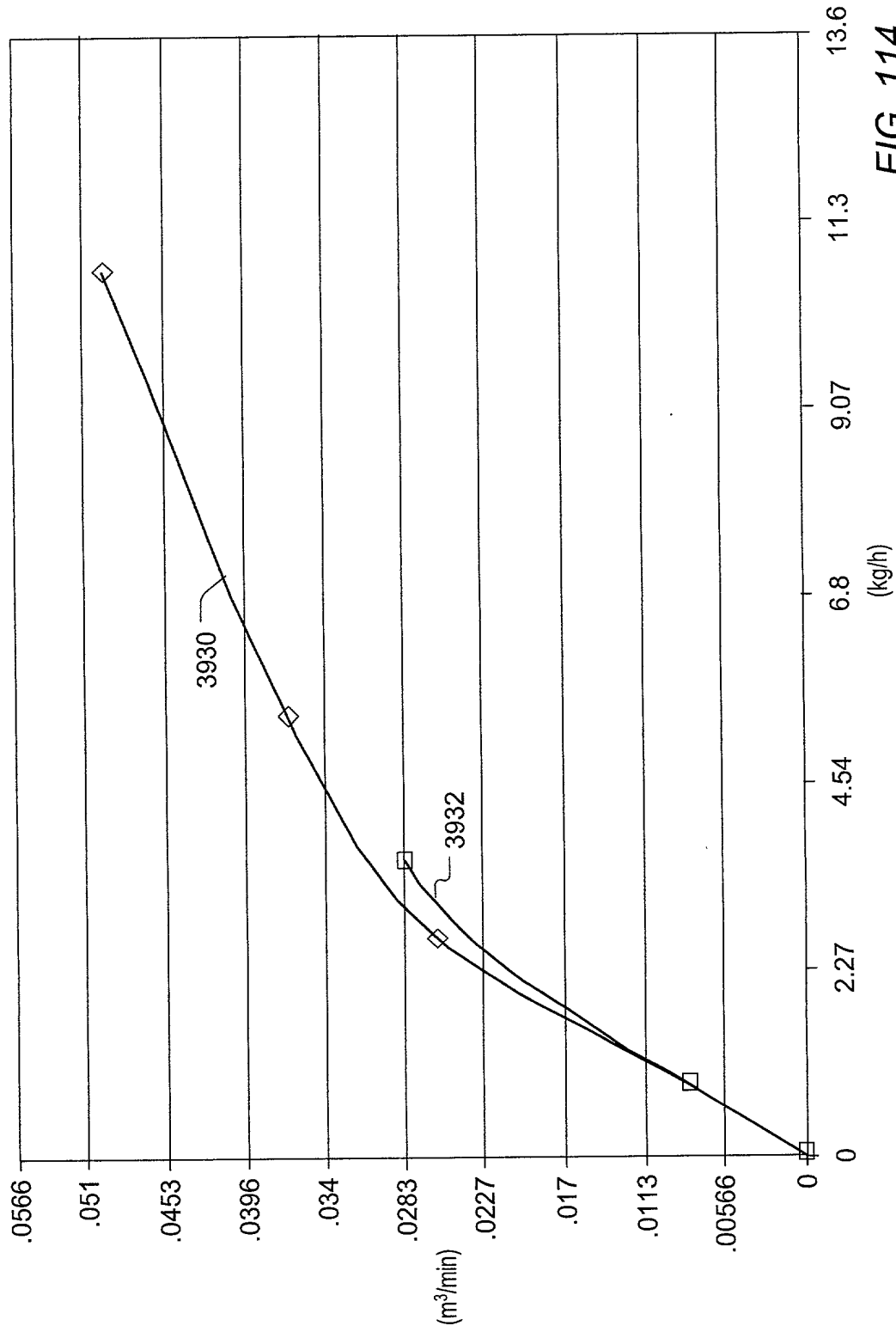


FIG. 114

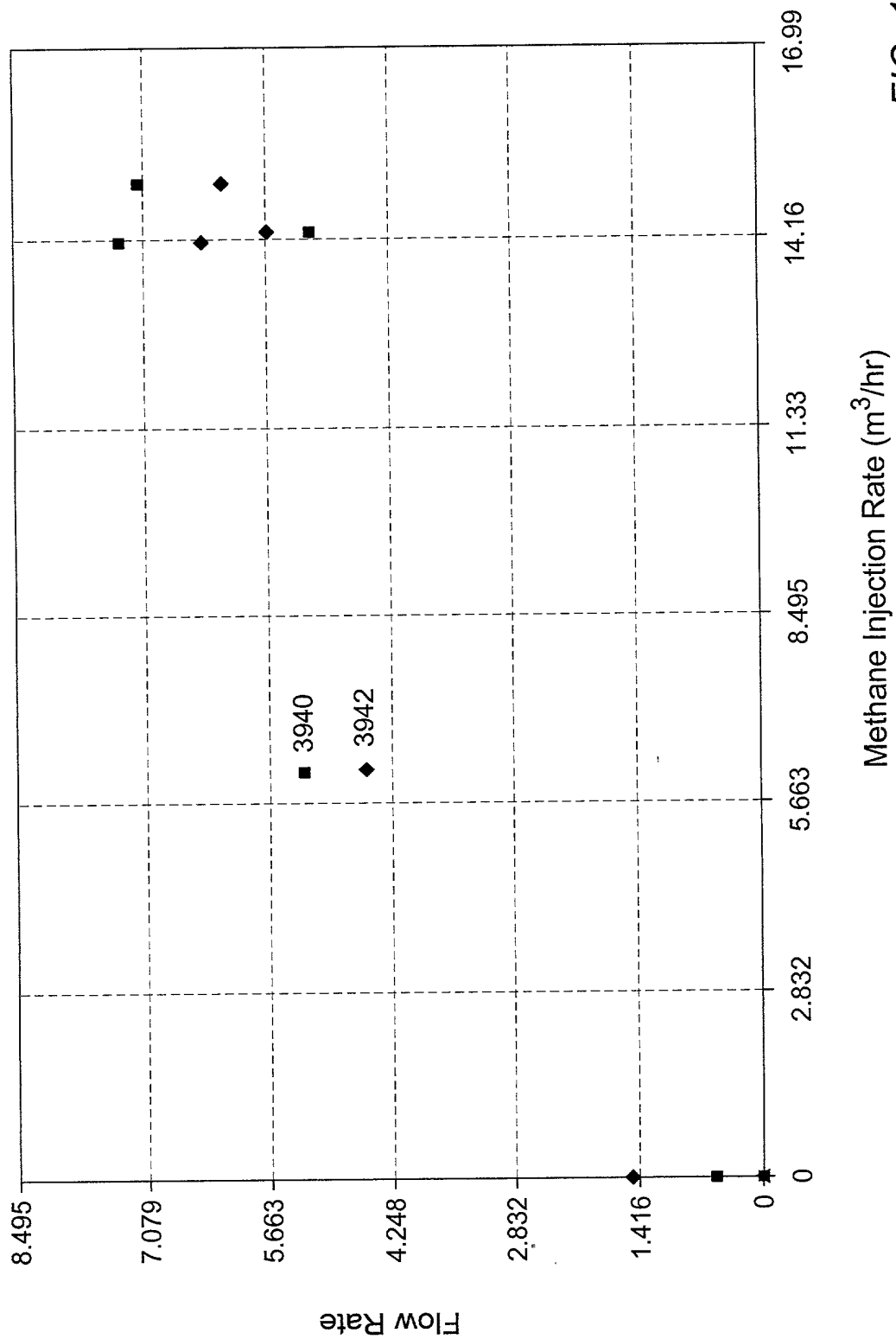


FIG. 115

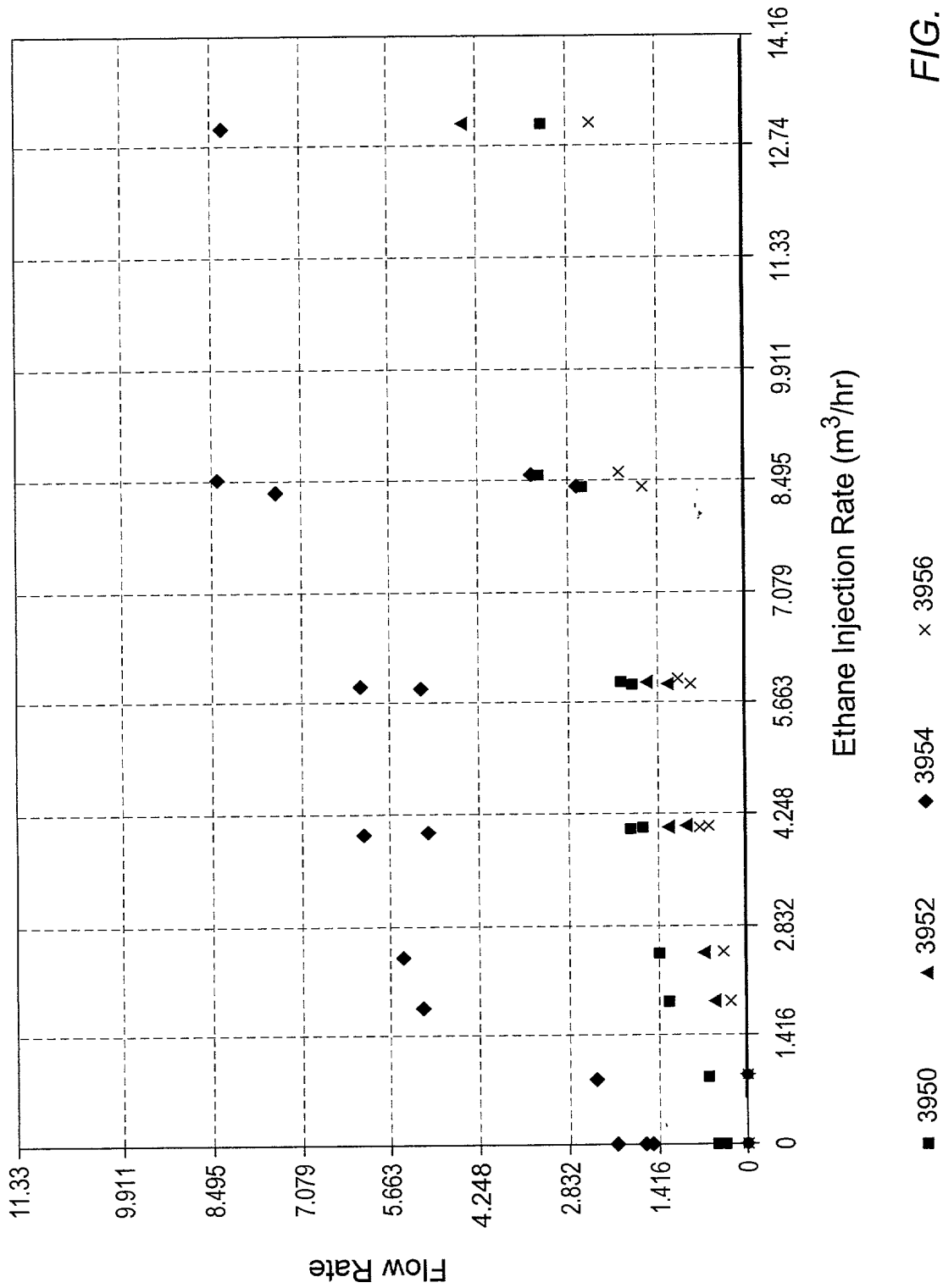


FIG. 116

Flow Rate vs. Propane Injection Rate

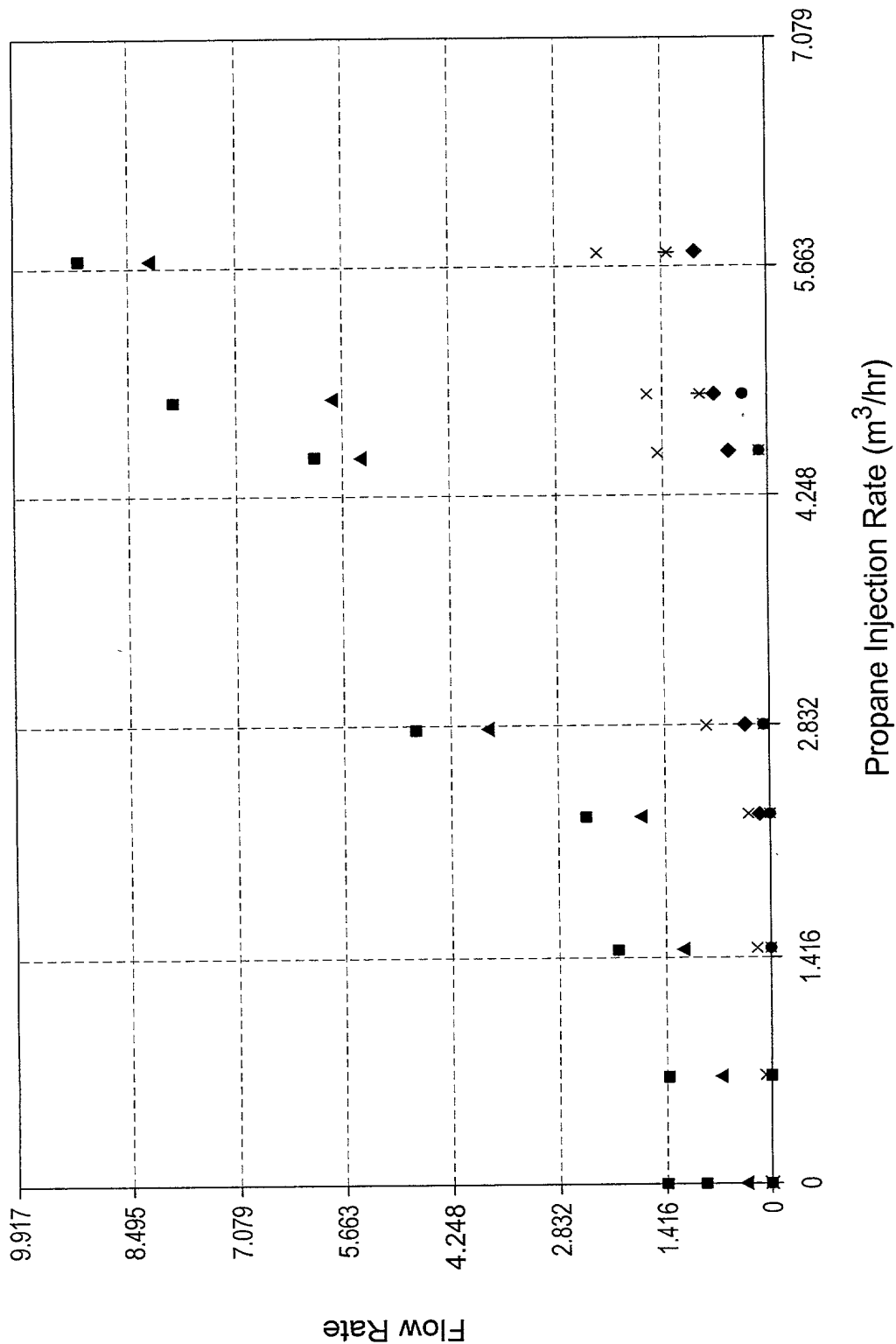
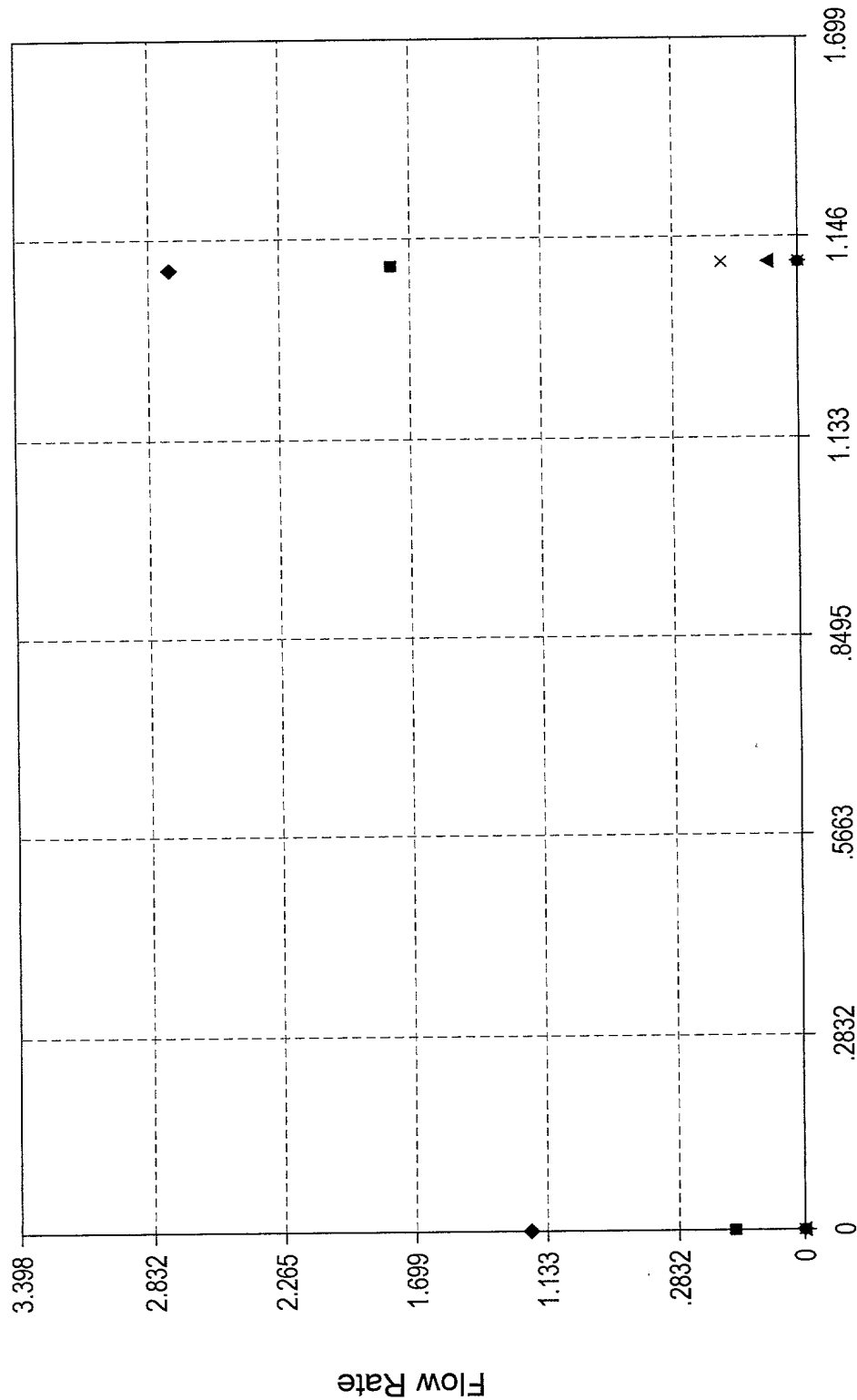


FIG. 117

Flow Rate vs. Butane Injection Rate



Butane Injection Rate (m³/hr)

FIG. 118

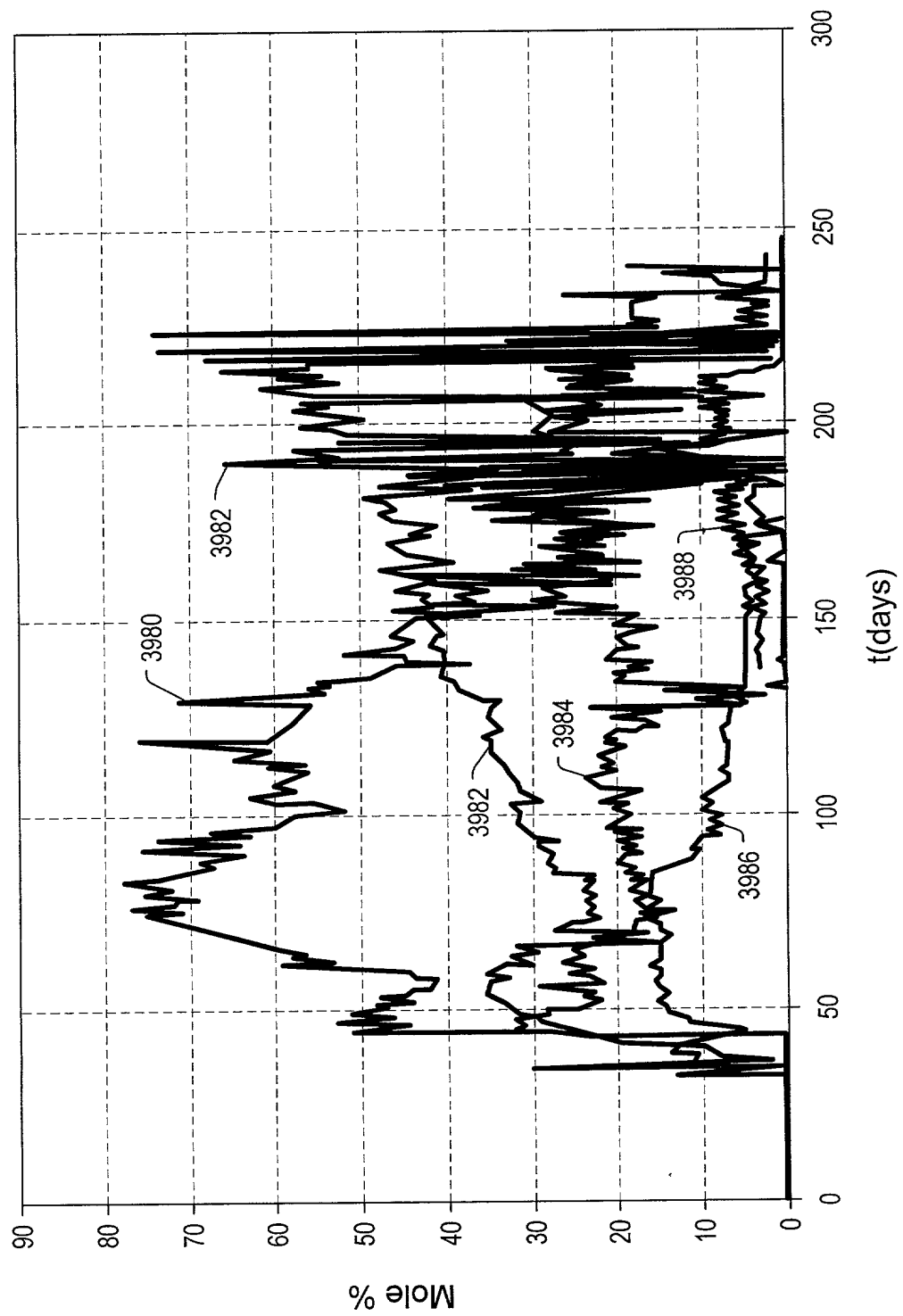


FIG. 119

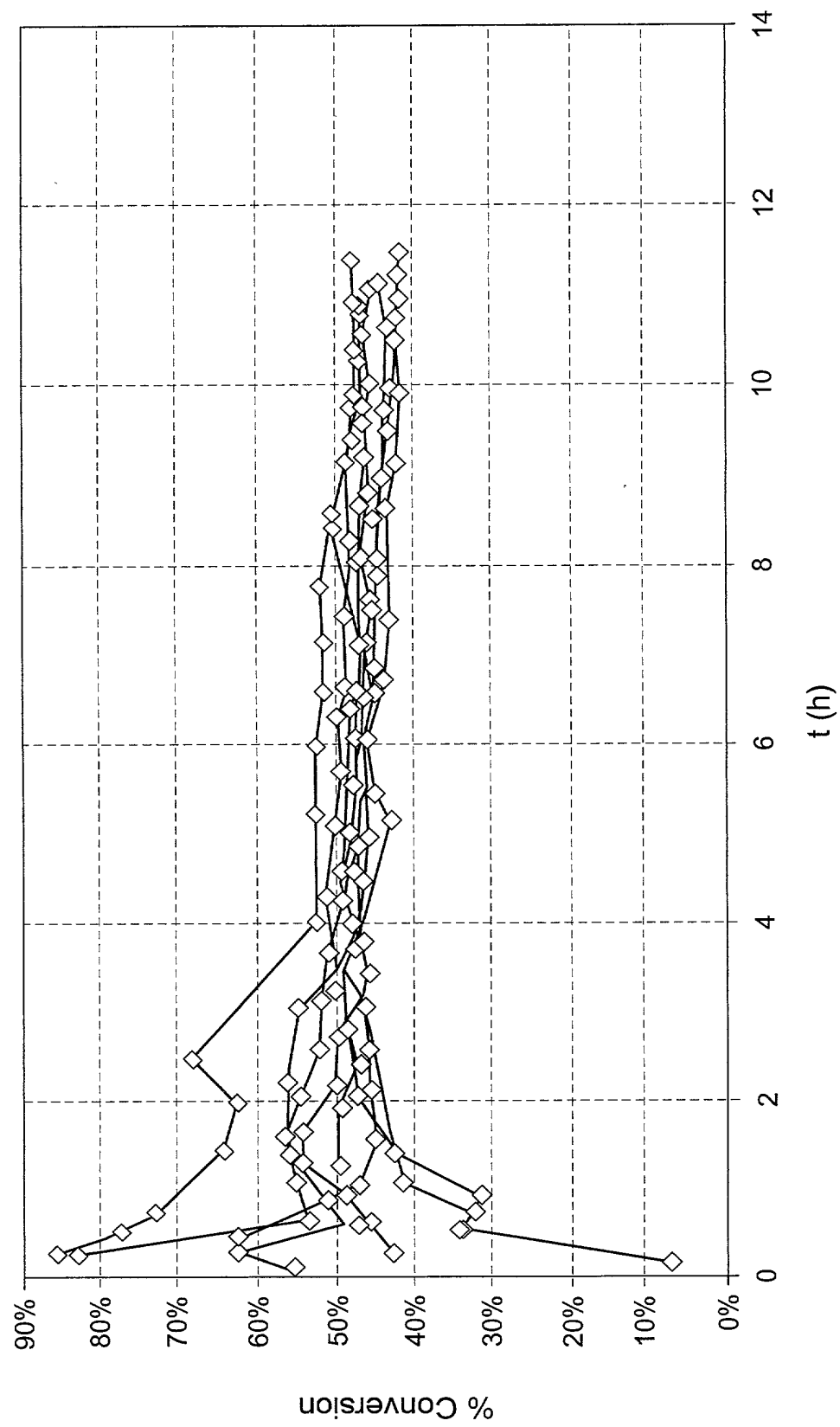


FIG. 120

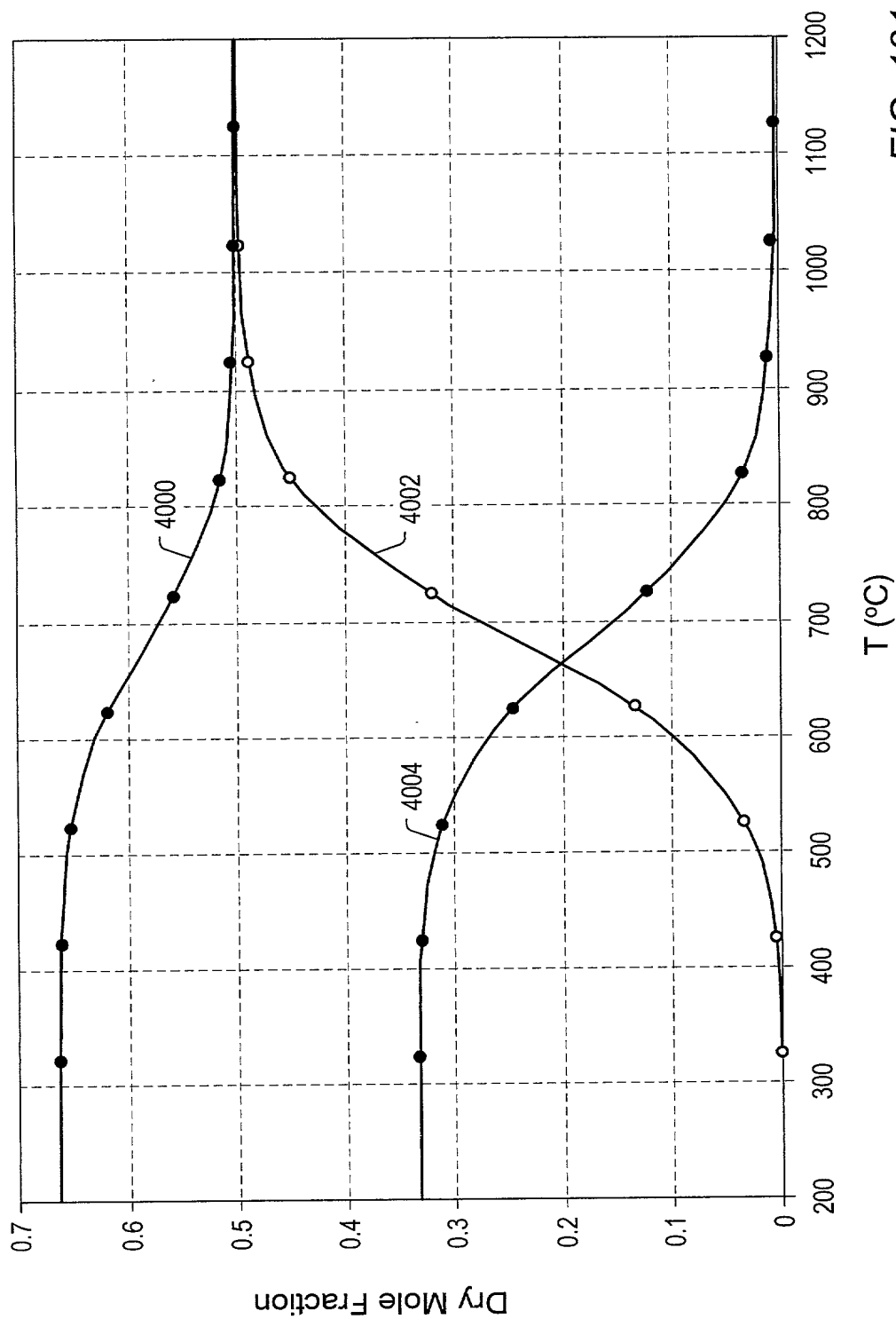


FIG. 121

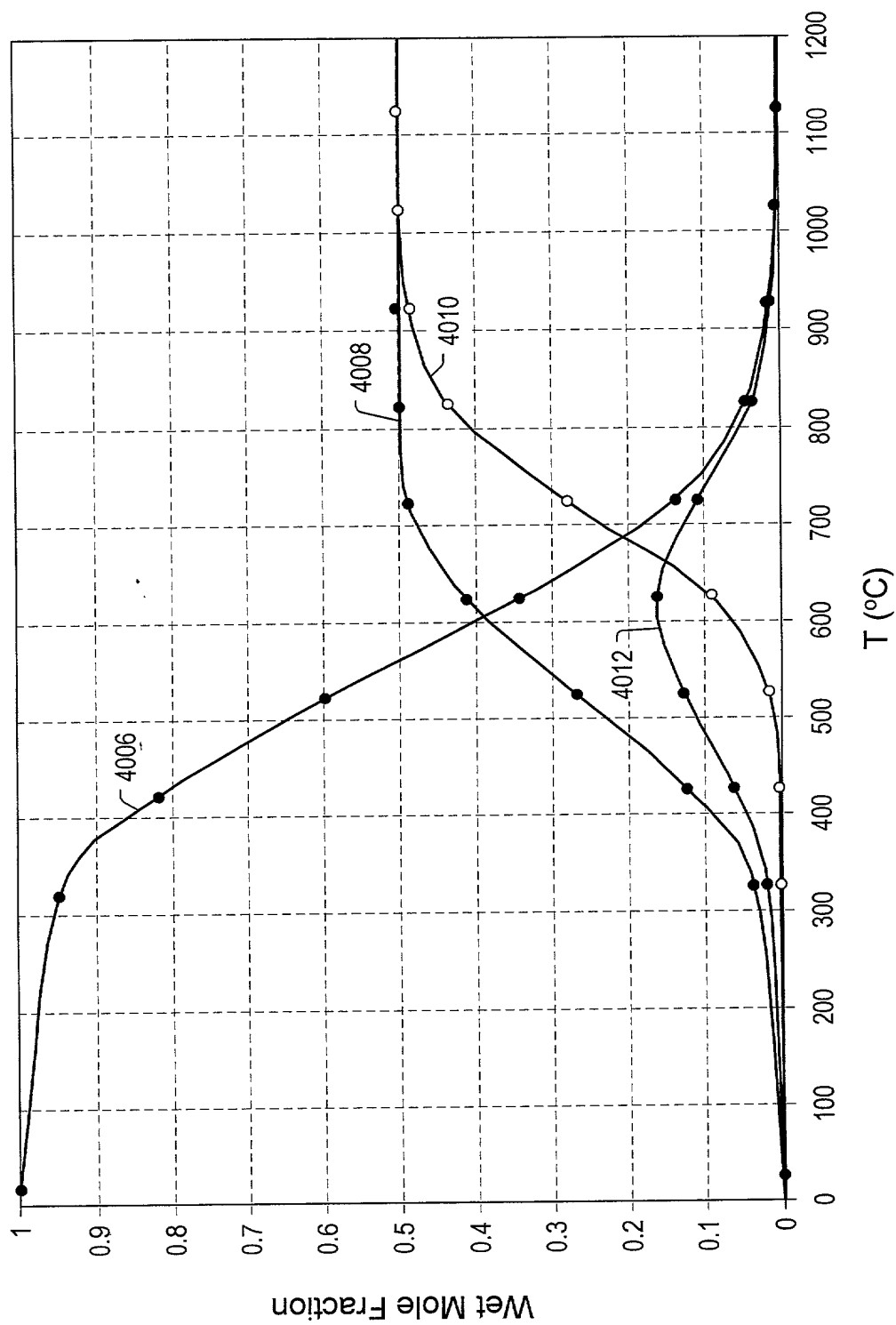
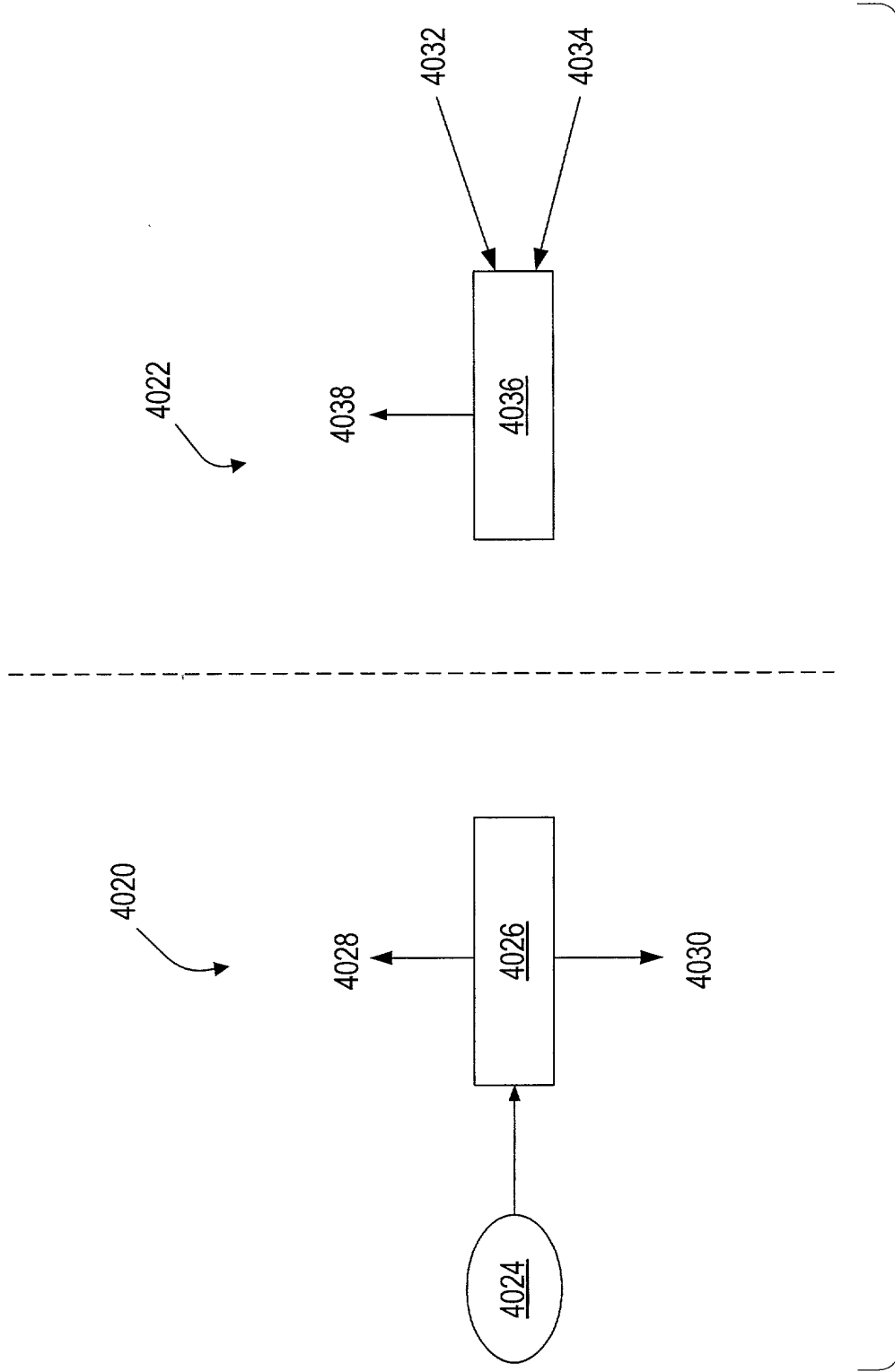


FIG. 122



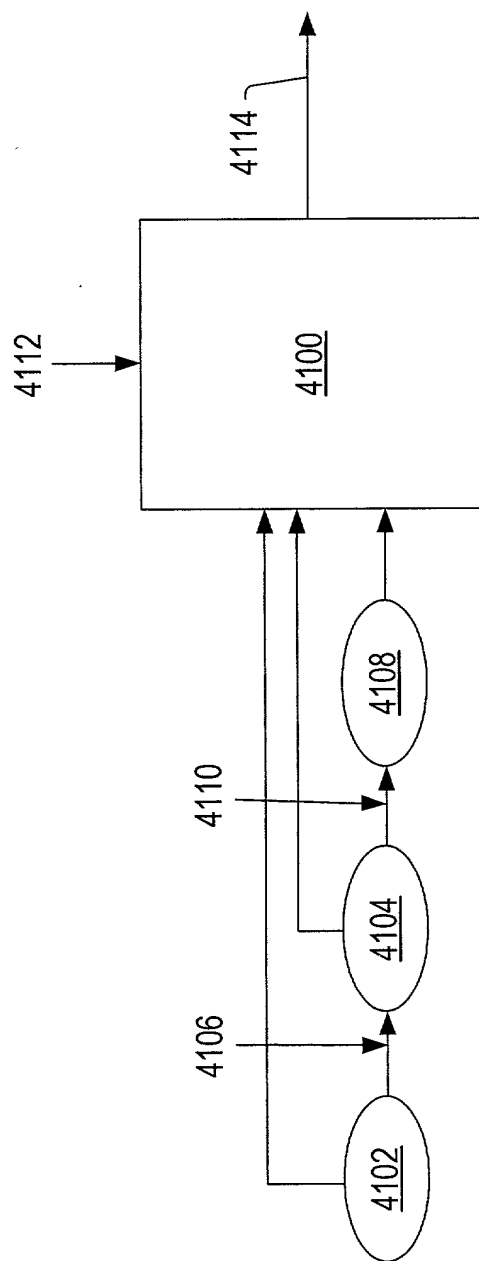


FIG. 124

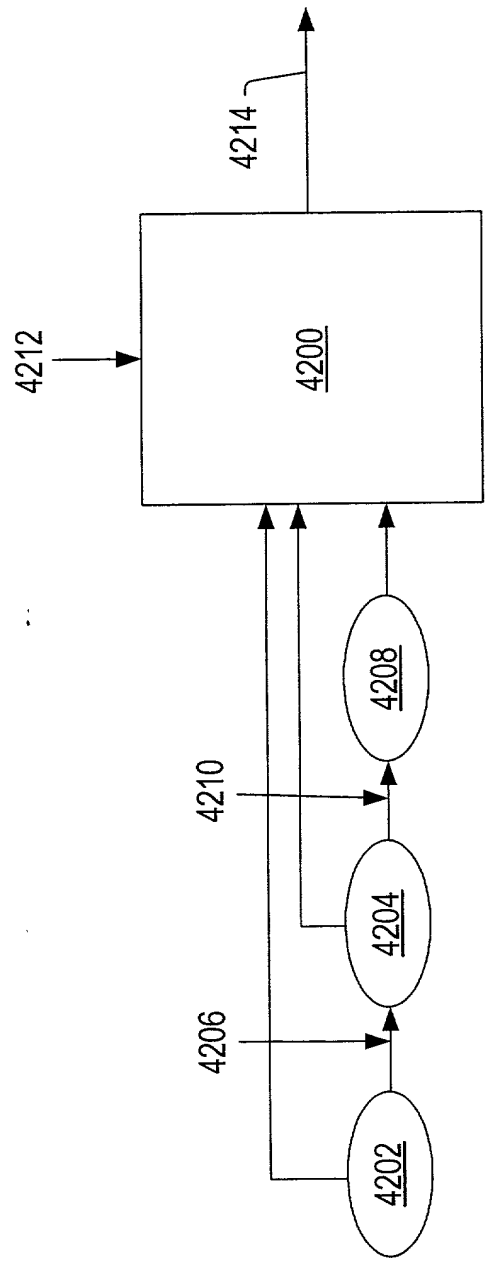


FIG. 125

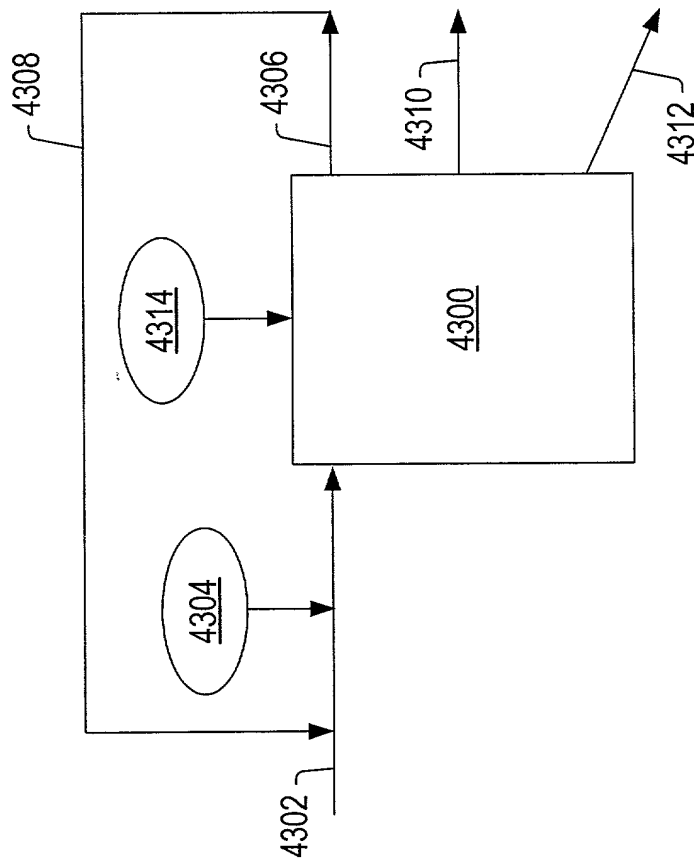


FIG. 126

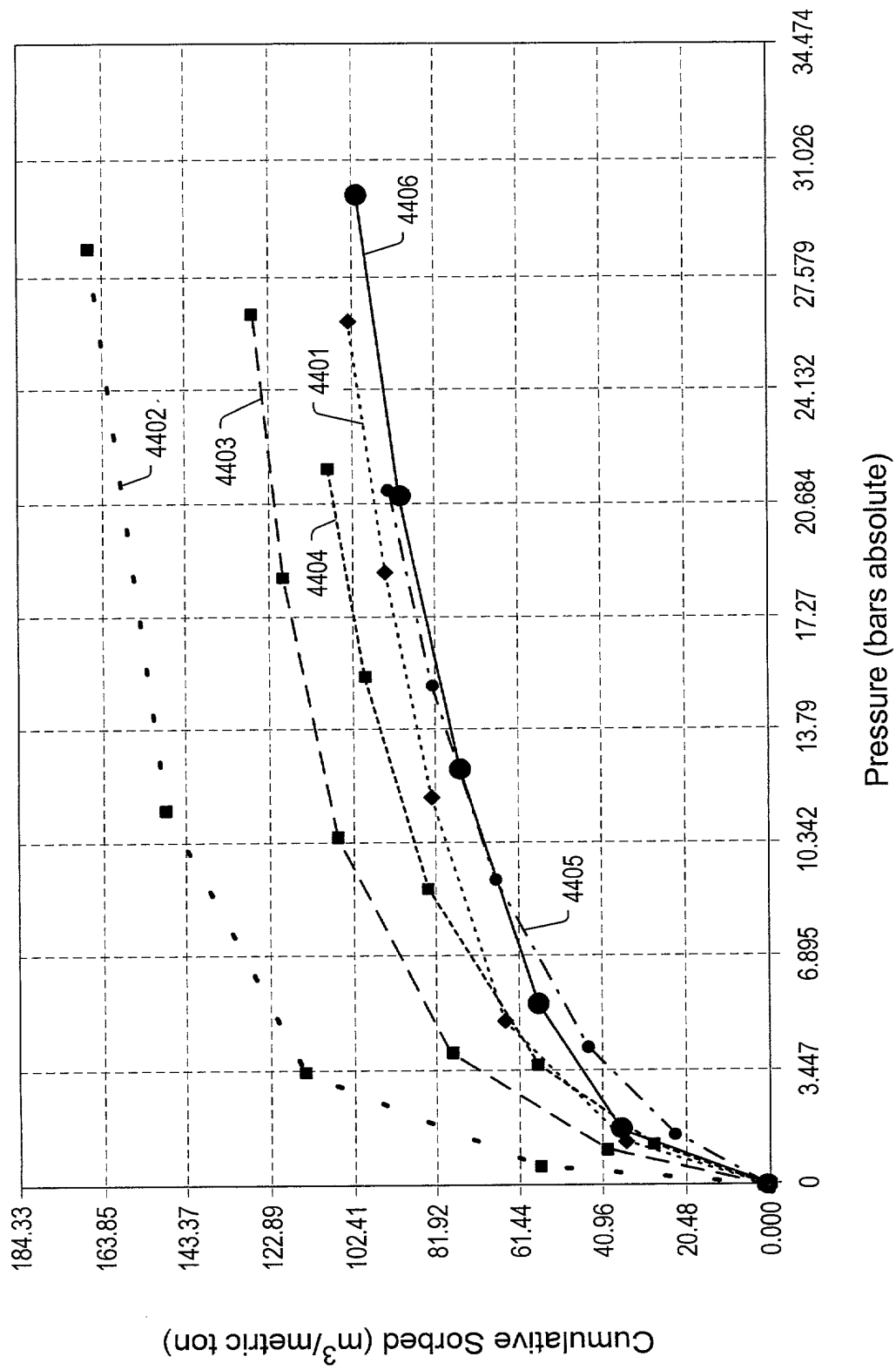


FIG. 127

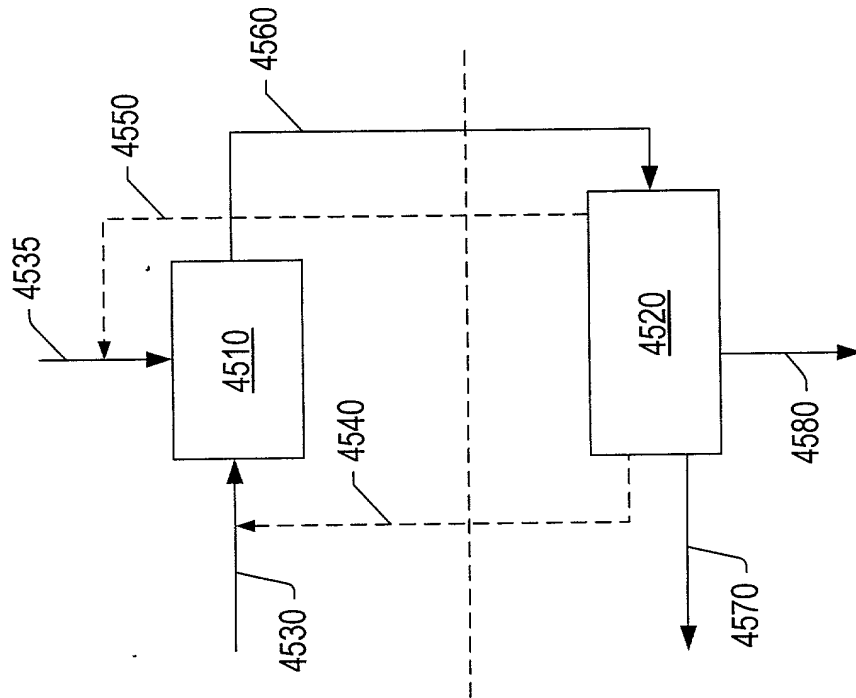


FIG. 128

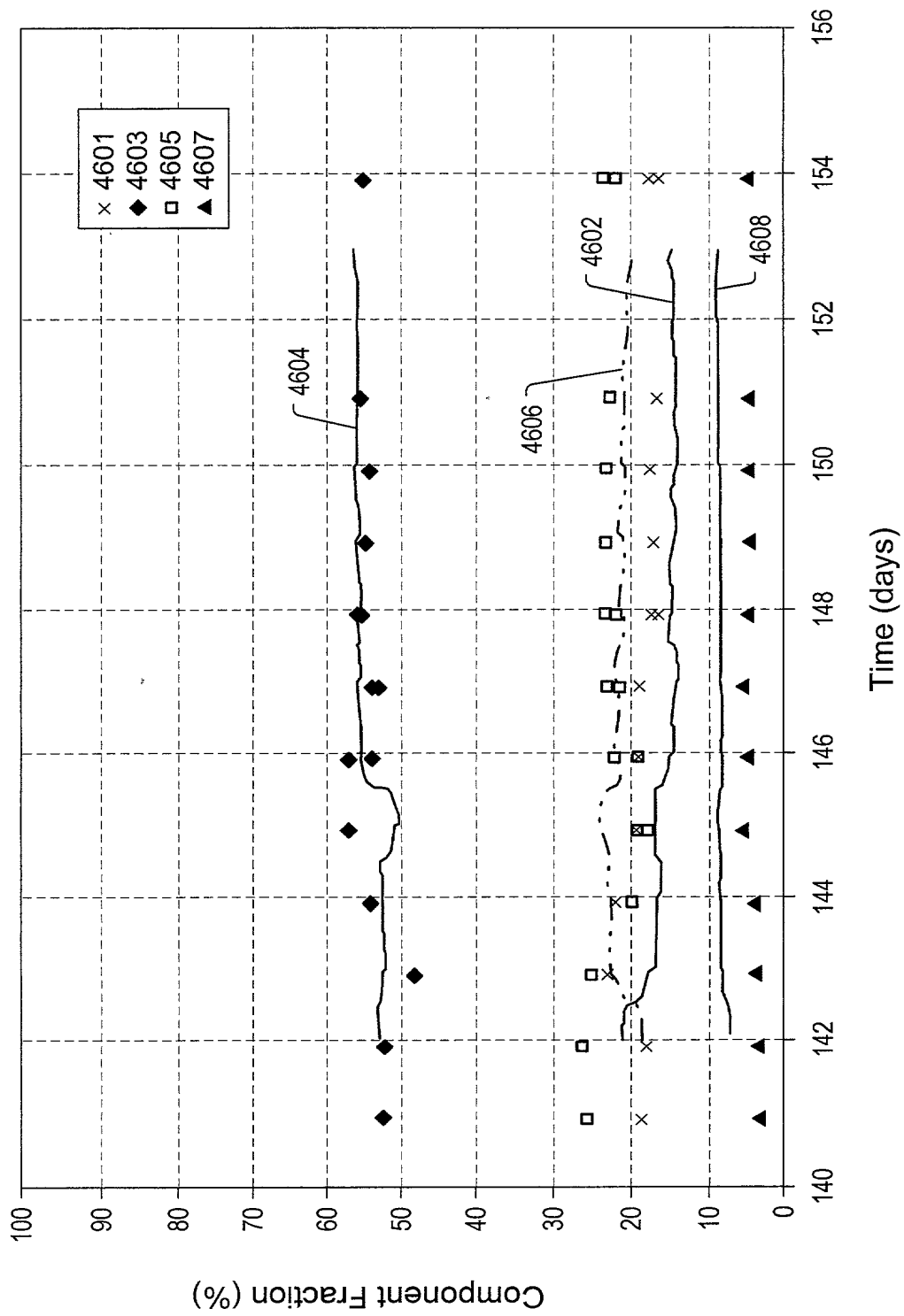


FIG. 129

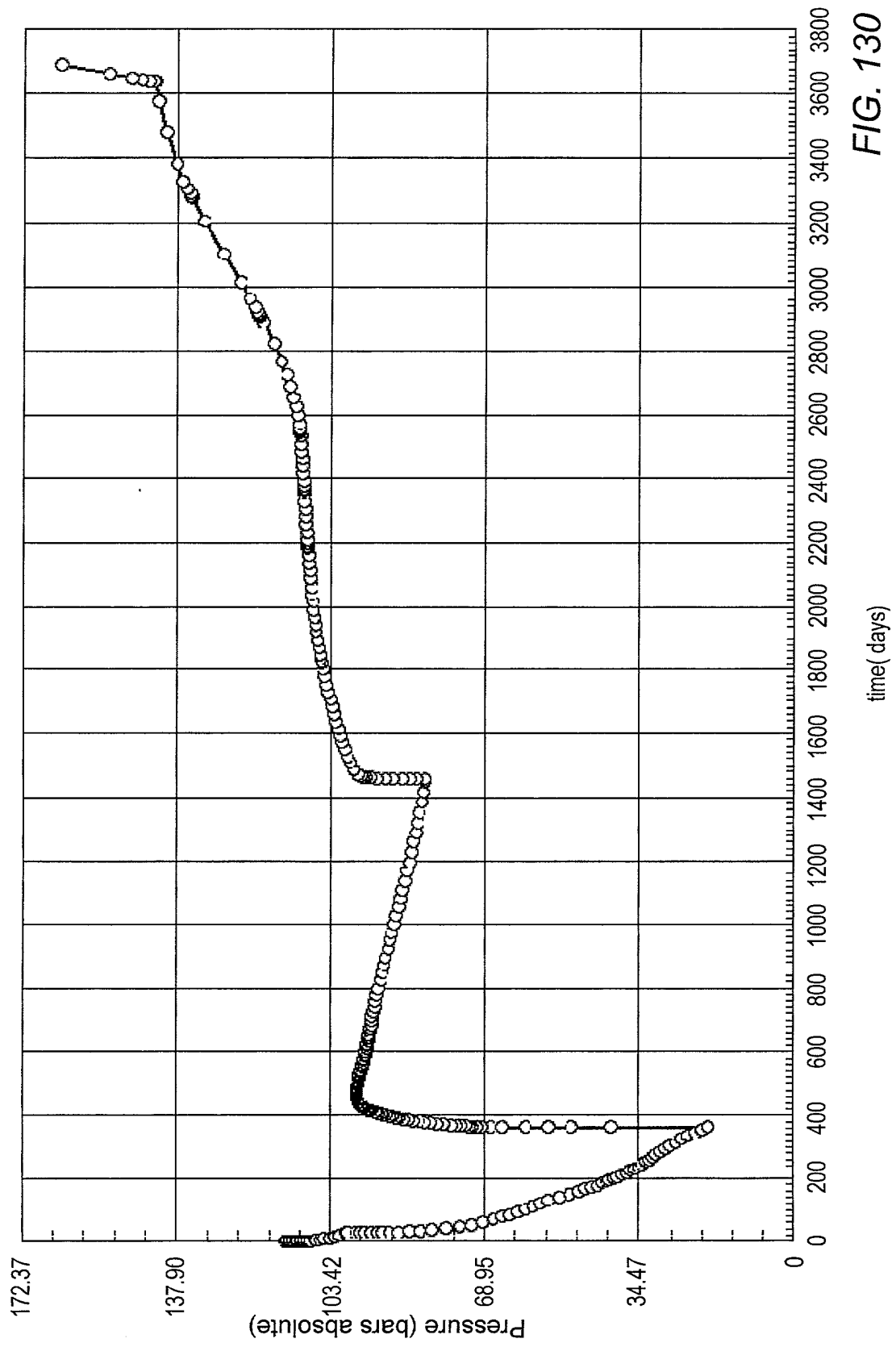


FIG. 130

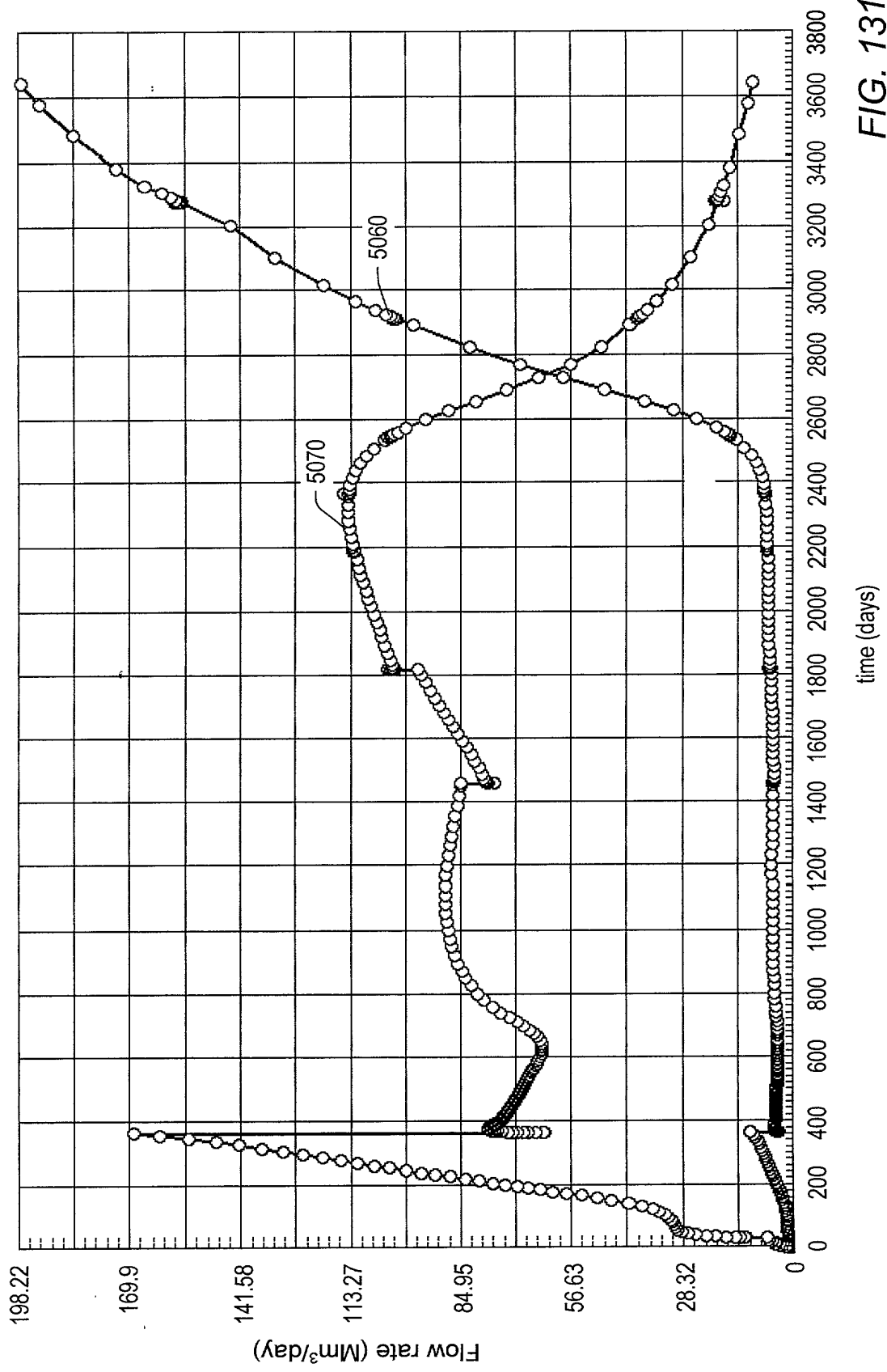


FIG. 131

FIG. 132

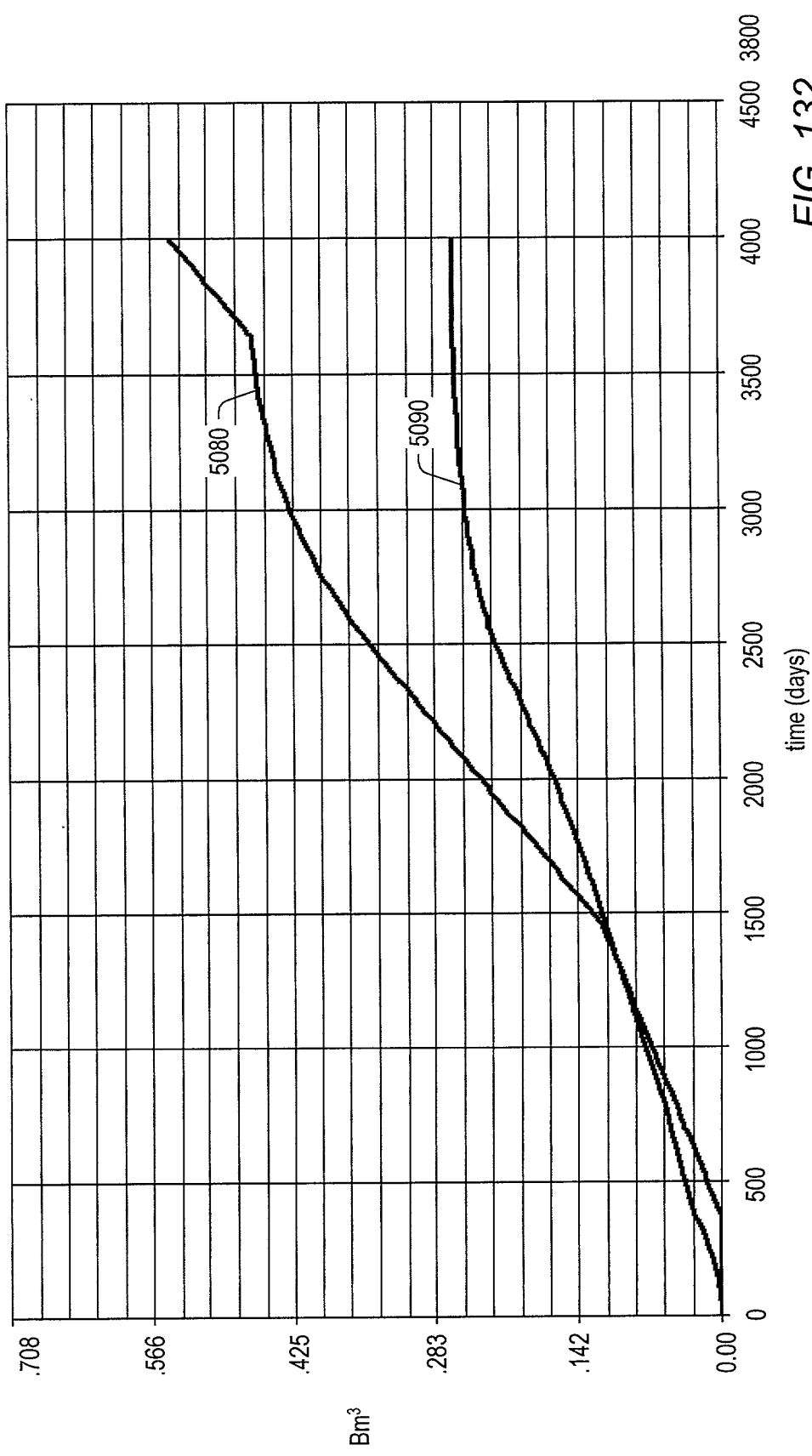


FIG. 132

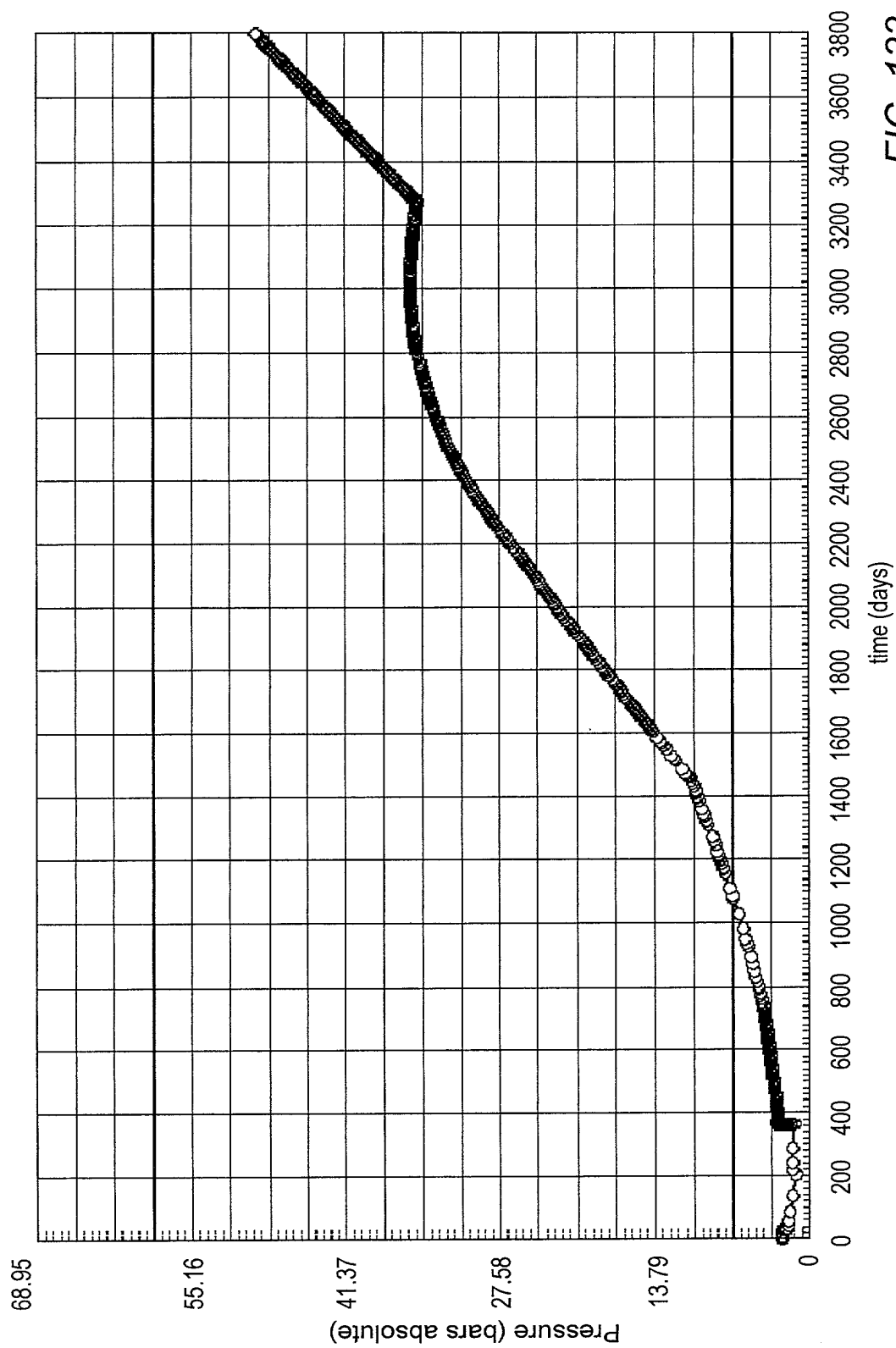


FIG. 133

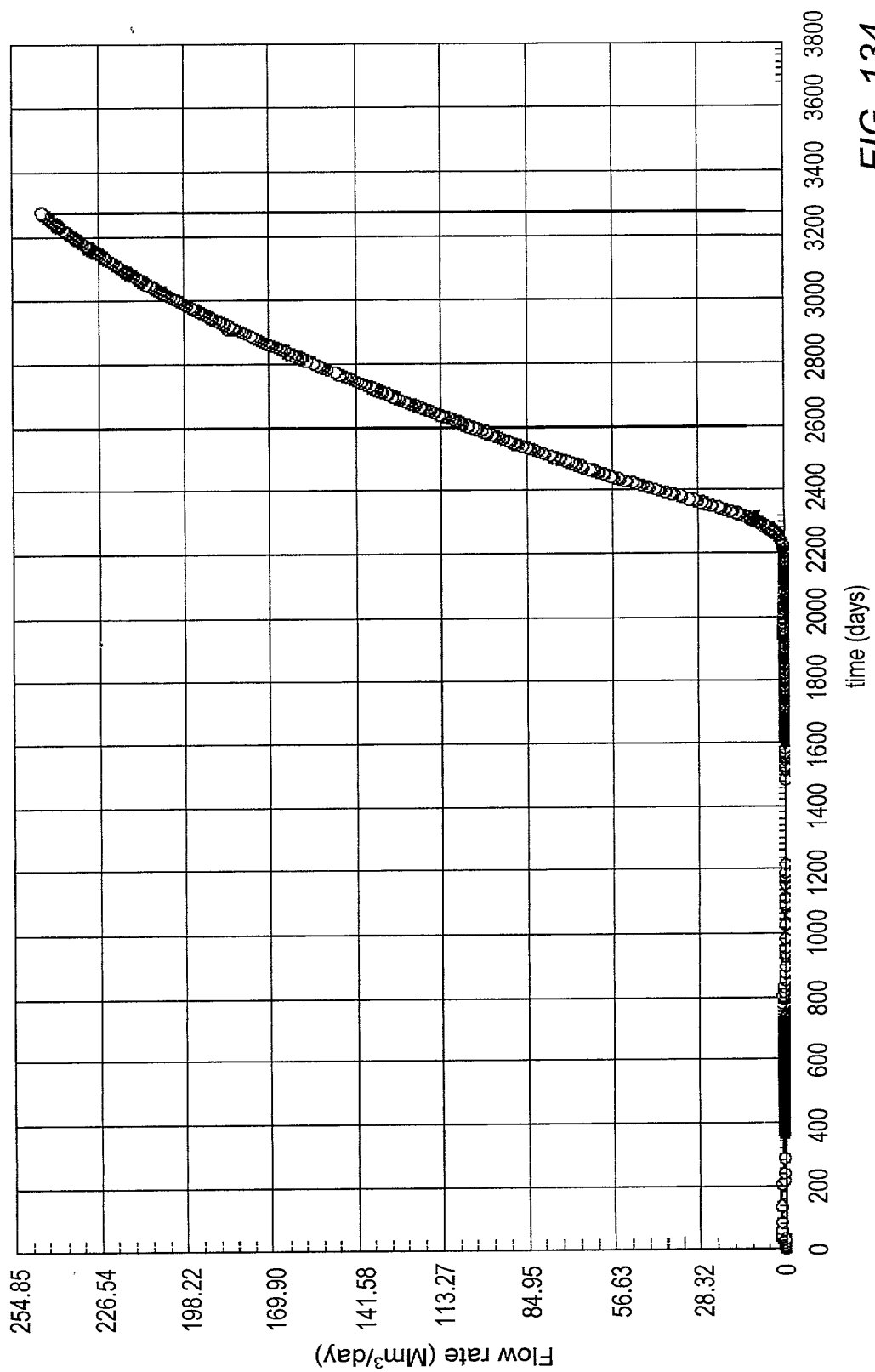


FIG. 134

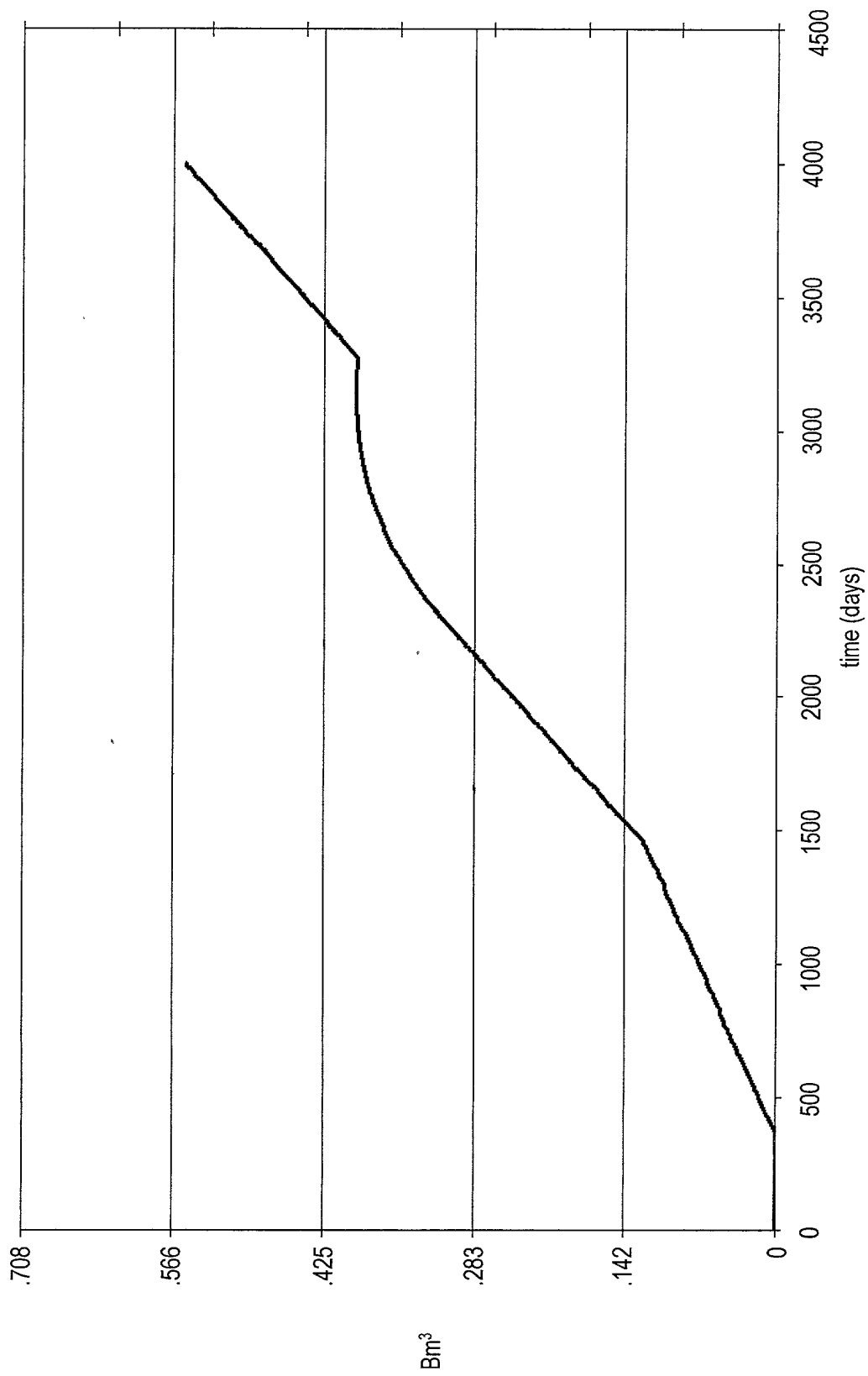


FIG. 135